

THAI OIL TOP TB

THAILAND / OIL & GAS

BUY

UNCHANGED

TARGET PRICE	THB70.00
CLOSE	THB59.50
UP/DOWNSIDE	+17.6%
PRIOR TP	THB70.00
CHANGE IN TP	UNCHANGED
TP vs CONSENSUS	+6.7%

Triple transformation underway

- Key transformations post 2024: CFP refinery upgrade, acquisition of the Chandra Asri (CAP) stake to diversify into the olefins chain, and gas-based petrochemical production via the CAP2 project.
- We think TOP's capital rise of up to 275.12m new shares is sound.
- Values of THB199.7 (7x) to THB304.6b (9x) 2022E EV/EBITDA.

Capital rise kicks off enticing growth roadmap via CFP and CAP

We think TOP's plan to raise capital of up to 275.12m new shares in a PO is sound and critical for its three key transformations post 2024: its Clean Fuel Project (CFP) refinery upgrade, the acquisition of a stake in Chandra Asri to diversify its chemical unit into the olefins chain and establish a new market in Indonesia, and investments in gas-based petrochemical production via CAP2 using up to 70% gas feedstock.

CAP2 a "game changer" for TOP's chemical competitiveness

TOP's investment of USD1.2b (USD270m subject to FID) for a 15.38% stake in CAP is a key strategic move that would permanently transform TOP's competitiveness from a refinery-driven company to a more diversified, more integrated, and more competitive producer to enhance the value of its oil and derivative products. We think the flexibility of using up to 70% propane gas or naphtha as a feedstock for CAP2 would not only double its potential capacity but also enhance its competitiveness.

CFP upgrade to greatly enhance refinery product flexibility

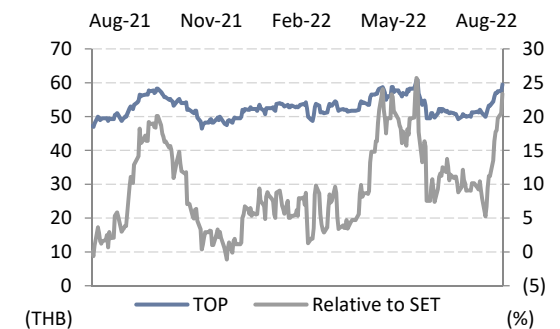
TOP's USD4.6b, net of USD0.8b from the divestment of ERU, investment in the CFP will strategically transform TOP's refinery into a larger, highly competitive plant, which we think is mandatory for not only survival but also for earnings growth sustainability, considering that raising the upgrading ratio to 50%, up from the current 28%, would greatly enhance TOP's crude options and product flexibility in a business with highly dynamic crude prices, crude premiums, and product-crude margins.

Values of THB199.7 (7x) to THB304.6b (9x) 2022E EV/EBITDA

Including the impacts of the capital increase and the CFP, assumed to occur in 2022 to match the capex, we derive a value range of THB199.7 (7x) to THB304.6b (9x) based on 2022E EV/EBITDA, decreasing to THB172.1b (7x) to THB256.2b (9x) if based on 2023E EV/EBITDA. Although TOP's 12-year average 8.8x EV/EBITDA post capital increase and the CFP would be THB457.1b, we think TOP's valuation range will increase post CFP given the enhancements to its operational efficiency via superior crude flexibility, production yield via higher middle distillate yields, and the benefits to its asset portfolio via diversification into olefins and increased synergies for its refinery and petrochemical businesses.

KEY STOCK DATA

YE Dec (THB m)	2021	2022E	2023E	2024E
Revenue	335,827	536,209	476,521	470,840
Net profit	12,578	45,498	13,654	13,324
EPS (THB)	6.17	22.30	6.69	6.53
vs Consensus (%)	-	37.8	1.7	1.8
EBITDA	20,640	39,338	28,957	29,212
Core net profit	12,578	16,765	13,654	13,324
Core EPS (THB)	6.17	8.22	6.69	6.53
Chg. In EPS est. (%)	-	26.6	(1.2)	(12.9)
EPS growth (%)	nm	33.3	(18.6)	(2.4)
Core P/E (x)	9.7	7.2	8.9	9.1
Dividend yield (%)	4.7	16.9	5.1	4.9
EV/EBITDA (x)	12.6	7.4	8.5	7.1
Price/book (x)	1.0	0.8	0.7	0.7
Net debt/Equity (%)	110.3	104.3	72.7	46.6
ROE (%)	10.6	12.0	8.4	7.9



Share price performance	1 Month	3 Month	12 Month
Absolute (%)	19.0	4.4	26.6
Relative to country (%)	13.1	3.9	23.0
Mkt cap (USD m)	3,825		
3m avg. daily turnover (USD m)	25.6		
Free float (%)	45		
Major shareholder	PTT plc. (48%)		
12m high/low (THB)	62.25/46.25		
Issued shares (m)	2,040.03		

Sources: Bloomberg consensus; FSSIA estimates



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Investment thesis

In 2020, regulations came into force mandating the use of low sulphur fuel oil (LSFO) by the global shipping industry. We think TOP stands out as one of the potential winners in Asia for capturing the projected widening diesel-fuel oil refinery spreads. TOP has sustained earnings improvements since 2009, thanks to its well-diversified portfolio. We expect 40-50% of its 2022 earnings to be derived from its non-refinery businesses, including aromatics (20%), lube (10%), power (10%) and marine transportation (3%).

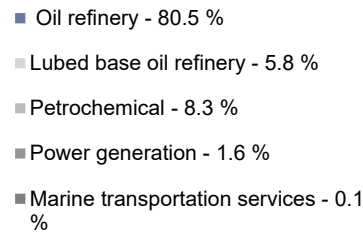
We believe TOP's Clean Fuel Project (CFP) will allow it to deploy its capital more efficiently and position itself to benefit from the projected USD2-4/bbl higher market gross refining margin (GRM) from the widening diesel-Dubai spread. This is because TOP intends to convert its loss-making fuel oil capacity to produce diesel post the completion and start-up of the CFP in 2024.

Company profile

TOP operates Thailand's largest single-site refinery, which is one of the most complex refineries in the Asia Pacific region with a nameplate capacity of 220,000 bopd. It also undertakes power generation, petrochemical production and oil and petrochemical product transportation.

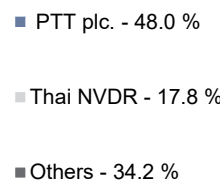
www.thaioilgroup.com

Principal activities (revenue, 2021)



Source: Thai Oil

Major shareholders



Source: Thai Oil

Catalysts

A key potential catalyst for TOP would be a higher-than-expected recovery in market GRM due to stronger-than-expected diesel cracks and a lower-than-expected crude premium.

Risks to our call

Downside risks to our EV/EBITDA-based TP are 1) a sharp fall in oil price; 2) weak demand for refined oil products; 3) customer concentrations; 4) currency risk; 5) interest rate risk; and 6) a raw material shortage.

Event calendar

Date	Event
Oct 2022	3Q22 results announcement

Key assumptions

	2022E (USD/bbl)	2023E (USD/bbl)	2024E (USD/bbl)
Dubai oil price	120.0	110.0	110.0
Refining margin	12.0	8.2	7.9
Crude premium	6.0	3.0	0.5
Diesel-Dubai margin	35.0	24.0	20.0
Jet-Dubai margin	35.0	24.0	20.0
Gasoline-Dubai margin	25.0	19.0	17.0
HSFO-Dubai margin	(20.0)	(12.0)	(5.0)

Source: FSSIA estimates

Earnings sensitivity

- For every 1% increase in the average Dubai oil price, we project 2022 earnings to rise by 2.4%, and vice versa, all else being equal.
- For every 1% increase in market GRM, we estimate 2022 earnings will rise by 2%, and vice versa, all else being equal.
- Stability in crude oil prices, rising diesel cracks and a low crude premium are key for earnings growth.

Source: FSSIA estimates

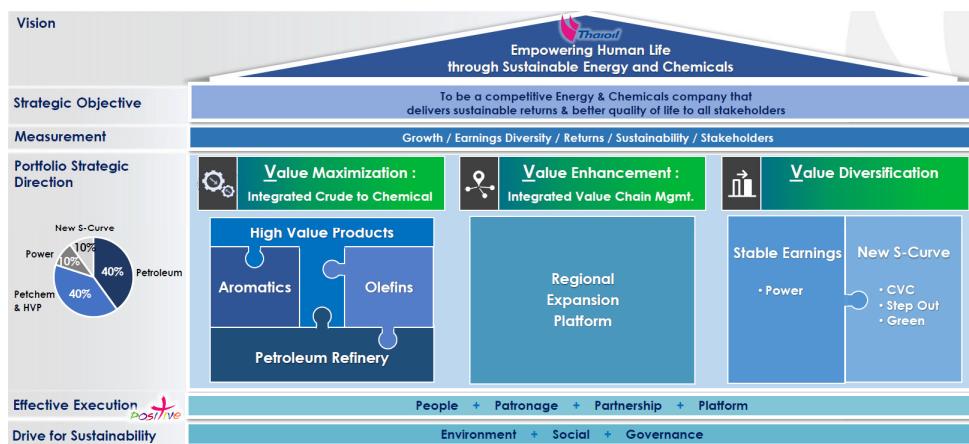
Triple transformation underway

After decades of gradual capacity expansion and value enhancement, TOP has made two big strategic moves to not only grow its capacity but also enhance the competitiveness of its asset portfolio that should materialise starting in 2024 onward.

First, TOP invested USD5.4b in a CFP upgrading facility excluding any cost overrun, with a net investment cost of USD4.6b after deducting a USD757m divestment gain for the Energy Recovery Unit (ERU) power plant that uses petroleum pitch to produce 250MW of power and 175 tonnes per hour (tph) of steam.

Second, TOP will acquire a 15.38% stake in CAP with two payments of USD913m in the first tranche for a 15% stake, and USD270m for the second tranche to secure the remaining 0.38%, subject to CAP2's final investment decision (FID). The move offers diversification into the olefins value chain and a new high-growth market in Indonesia.

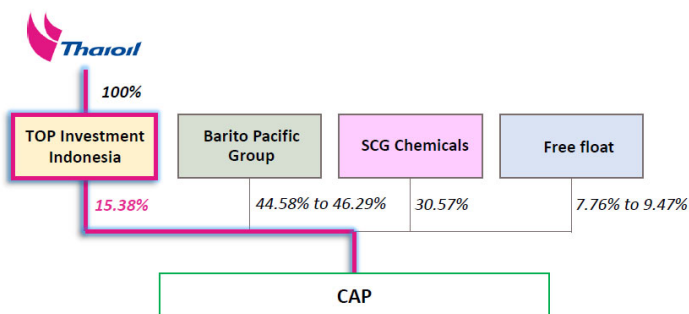
Exhibit 1: Strategic plan to create high shareholder value through expansion and diversification



Source: TOP

We think TOP's plan to raise capital by issuing up to 275.12m new shares via a public offering (PO) is sound and critical for TOP's three key transformations post 2024: a refinery upgrade under the CFP, the diversification of its chemical unit via the acquisition of a stake in PT Chandra Asri Petrochemical Tbk (TPIA IJ) into the olefins chain and establishing a new market presence in Indonesia, and gas-based petrochemical production via the CAP2 project which gives it the ability to consume over 70% gas feedstock.

Exhibit 2: Details of Investment in CAP



Investment for 15.38% in CAP split into 2 tranches		
	Payment (US\$ mm)	% Share
1 st Tranche	913	15.0%
2 nd Tranche (when CAP2 FID in 2022)	270	0.38%
Total	1,183	15.38%

Source: TOP

TOP's plan for funding its growth roadmap

To fund the total USD6b capex for its two key projects (CFP at USD5.4b and CAP at USD1.2b), TOP plans to implement three strategic actions. First, TOP divested 10.78% of Global Power Synergy (GPSC TB, HOLD, TP THB70) to raise around THB20b. Second, TOP plans to issue up to 275.12m new shares to existing and new shareholders, targeted within 2H22. Third, TOP will receive a short-term, 90-day extended trade credit term loan from its parent company PTT (PTT TB, BUY, TP THB50).

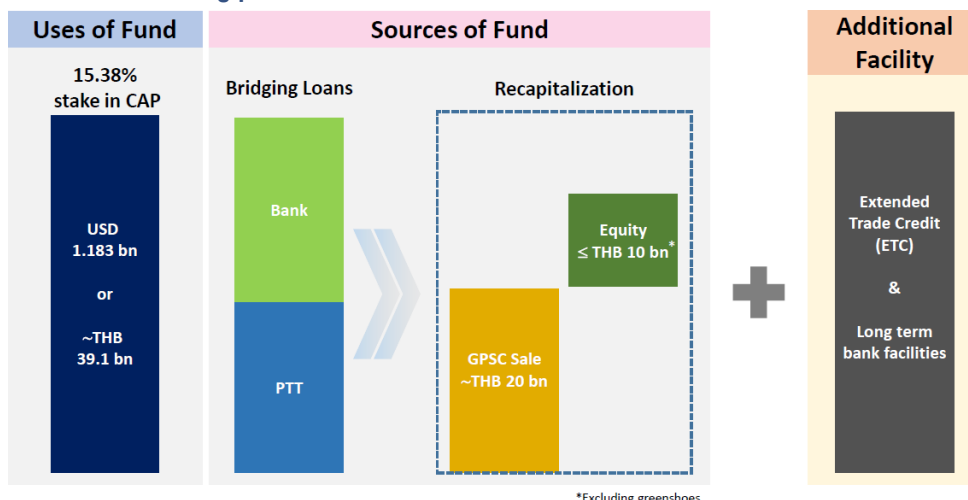
Exhibit 3: Recapitalisation plan

Transaction	<p>Recapitalization plan for CAP investment funded by bridging loan, will consist of:</p> <ol style="list-style-type: none"> GPSC Share Sale at 10.78% or 304,098,630 shares to PTT and/or Siam Management Holdings Company Limited ("SMH") (100% subsidiary of PTT) Equity Offering of up to 239.2 mm shares with Greenshoe of up to 35.9 mm shares (if any)
Objectives	<ul style="list-style-type: none"> ✓ Main objective is to repay bridging loan for the strategic investment in CAP ✓ Maintain optimal capital structure with expected net debt/equity of less than or equal to 1 time ✓ Maintain investment grade of company crediting rating
Completion	Within 2022
Timeline	<p>The timeline shows the following milestones and processes:</p> <ul style="list-style-type: none"> 17 Feb 22: BoD Approval for Recap Plan 7 Apr 22: AGM Approval for Recap plan GPSC Share Sale Execution: Target Completion By Q2/22. Sub-process: GPSC share transfer to PTT and/ or SMH. Equity Offering Execution: Target Completion By Q3 - Q4/22. Sub-process: Filing submission: after AGM; Offering & subscription process; Newly issued shares to be listed in the SET. <p>An Approval Process arrow spans from the BoD approval to the AGM approval.</p>

Source: TOP

According to management, the funding plan aims to achieve an optimal capital structure for TOP with net debt-to-equity (DE) of around 1.0x, maintain its investment grade credit rating over the short term and enable a credit rating upgrade long term, and minimise the impact of the EPS dilution on existing shareholders.

Exhibit 4: Funding plan for the transaction

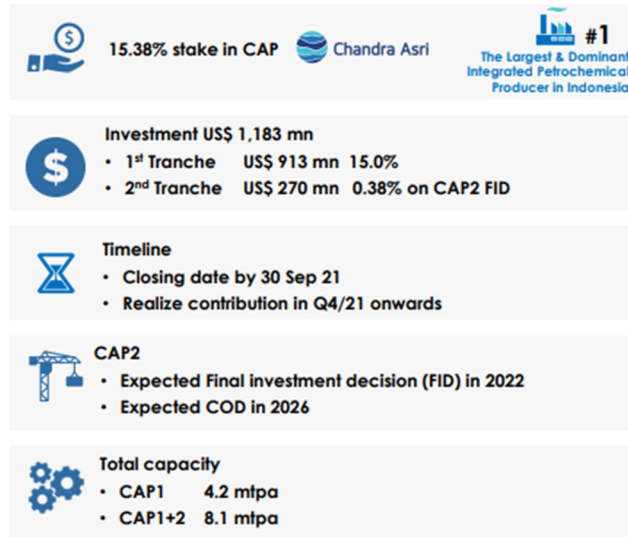


Source: TOP

CAP is TOP’s key strategic “game changer”

On 30 Jul-21, TOP announced its acquisition of a 15.38% stake in CAP via two payment tranches worth a total of USD1.2b. The first tranche of USD913m for a 15% stake was completed on 30 Sep-21 and the second tranche of USD270m will be paid subject to the announcement of the final investment decision for the CAP2 project, likely within 2022.

Exhibit 5: Olefins investment timeline



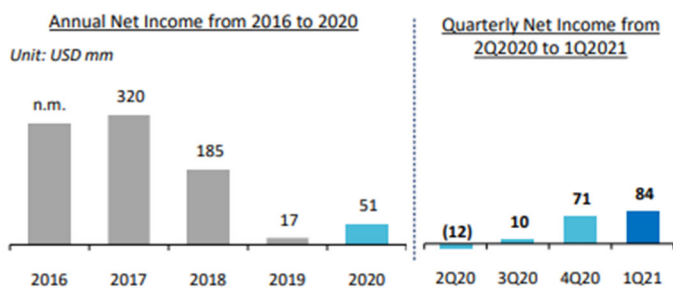
Source: TOP

CAP: TOP’s transformation #1 into olefins. Why CAP for TOP? We believe TOP’s acquisition of a stake in CAP will allow TOP to increase shareholders’ value in two major ways.

Financially, TOP will receive additional dividend income from CAP via its 15.38% stake in CAP1’s operation, which has shown continuous improvement thanks to the strong olefin industry margins and higher operational efficiency.

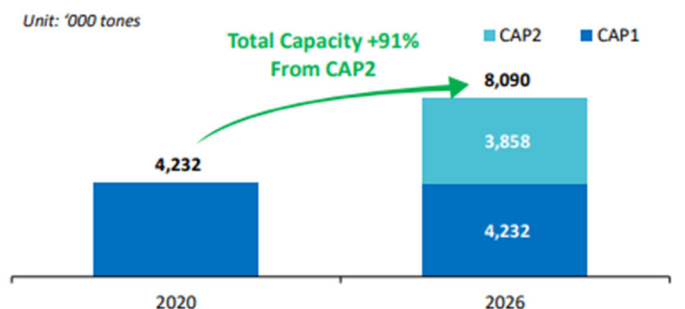
Though the olefins industry has now entered a margin downcycle due to the high naphtha feedstock cost and oversupply, we think TOP will be better positioned for gains by 2024 when its CFP and CAP2 projects are scheduled to be completed and commence their commercial operation dates (COD).

Exhibit 6: Share of profit from CAP to enhance TOP’s performance



Source: TOP

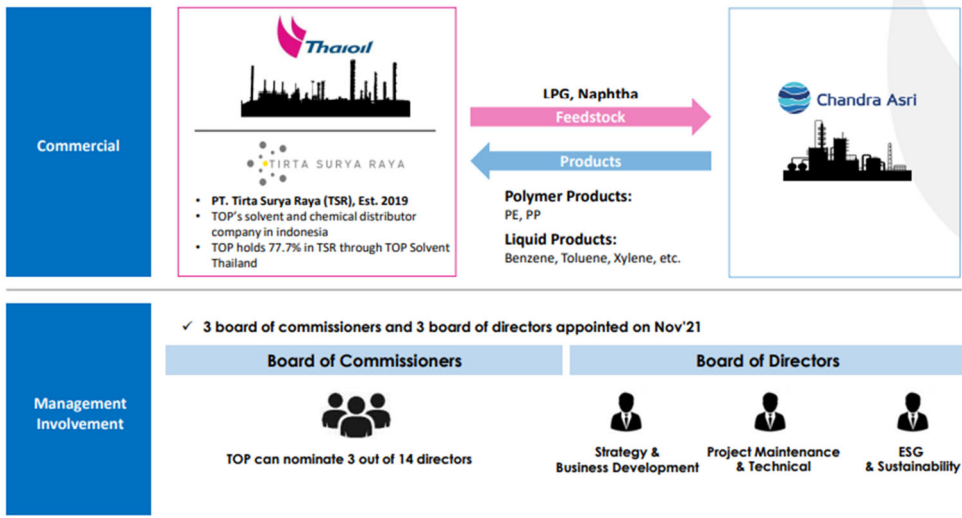
Exhibit 7: Performance expected to increase significantly from CAP2 operations



Source: TOP; 2026 figures are forecast by TOP

Strategically, we think TOP will benefit from the expansion into the olefin chemical chain via the forward integration of its refinery, aromatics, and lube asset portfolio, and could emerge as a partner in a new, revitalised CAP (CAP1 + CAP2) by 2025 with greater feedstock flexibility, world-scale production capacity of 3.1mtpa, and be well-positioned in Indonesia's high-growth market.

Exhibit 8: Key partnership arrangements

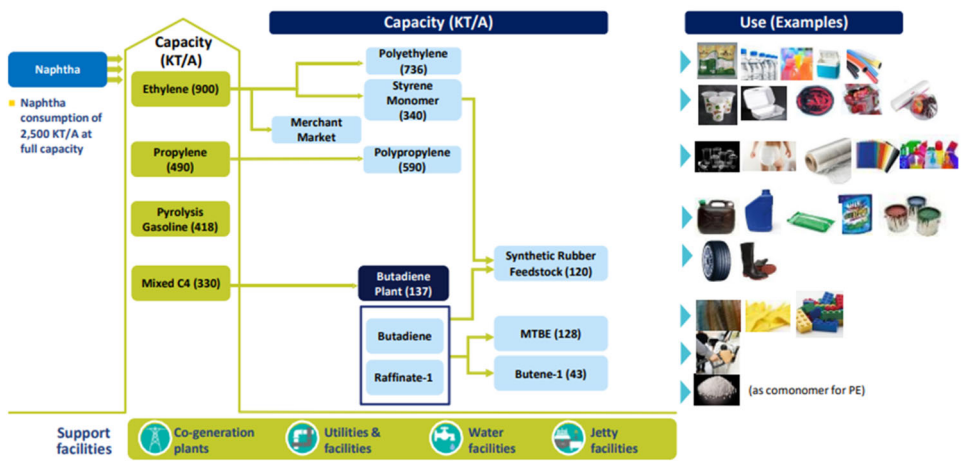


Source: TOP

CAP2 is a game changer for both CAP and TOP. Following Siam Cement (SCC TB, BUY, TP THB466)'s acquisition of a 30% stake at a cost of THB13.5b (USD0.4b) in Sep-11, CAP has seen its operations and profitability improve significantly thanks to SCC's shared operational expertise from its two olefin crackers in Thailand.

However, CAP1 is now likely reaching the limits of operational efficiency improvements and hence its profitability will depend on olefins industry margins and the naphtha price – the sole feedstock for CAP1.

Exhibit 9: Integrated production of diverse products for CAP1



Source: Chandra-Asri

CAP1 vs CAP2. Unlike CAP1, CAP2 is a new olefin cracker with a larger upstream capacity of 1.7mtpa and a more competitive feedstock structure that would position CAP well for future demand growth in Indonesia.

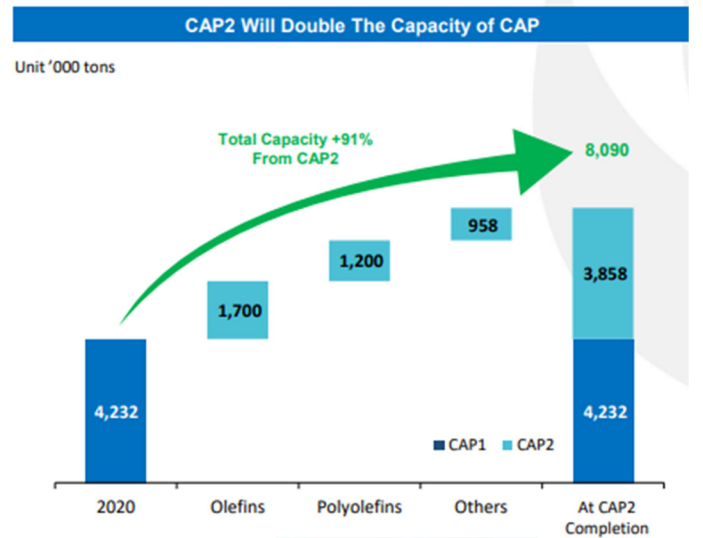
Exhibit 10: CAP2 expansion is a transformative project for CAP

CAP2 Project Overview

- \$ **Approx. USD 5 bn (+/- 30%) new plant to double CAP's Petrochemical Capacity**
- ⚙️ **Flexible Feedstock Configuration**
- 🏗️ **Synergy with Existing Plant**
 - 93% of Land has been secured adjacent to the existing plant
- 🏛️ **Strong Support From the Government**
 - 20+2 year Corporate Income Tax Holiday (even pre-FID)⁽¹⁾
 - EIA approved
- 📄 **Rights issue**
 - Expected primary proceeds of USD1.1bn
 - Doesn't expect another capital increase to develop CAP2
- ⚖️ **Expected Final investment decision (FID) in 2022**
Expected COD in 2026

Source: TOP

Exhibit 11: CAP2 would double the capacity of CAP



Source: TOP; CAP2 capacity at completion is forecast by TOP

Capacity: CAP2's larger production capacity for upstream olefins, at 1.7mtpa vs 1.39mtpa for CAP1, would allow CAP2 to achieve better cost savings from economies of scale than CAP1. We estimate 20-30% lower operating costs for CAP2.

Exhibit 12: Comparison of capacity and competitiveness between CAP1 and CAP2

Capacity (mtpa)	CAP1	CAP2	Total
Upstream	1,390	1,700	3,090
Ethylene	900	1,100	2,000
Propylene	490	600	1,090
Downstream - olefins	1,326	1,200	2,526
LLDPE	400	750	1,150
HDPE	336	-	336
PP	590	450	1,040
Downstream - aromatics	340	798	1,138
Benzene	-	335	335
Toluene	-	220	220
Mixed xylene	-	243	243
Styrene	340	-	340
Downstream - others	1,176	160	1,336
Synthetic Rubber	120	-	120
Methyl Tert-butyl Ether (MTBE)	128	-	128
Butene-1	43	-	43
Pygas	418	-	418
Crude C4	330	-	330
Butadiene	137	160	297
Total	4,232	3,858	8,090
Plant facility	Standalone	Shared facilities	
Feedstock	Naphtha	Naphtha/Propane	
Naphtha (%)	100	30	61
Propane (%)	-	70	39

Sources: CAP; TOP; FSSIA estimates

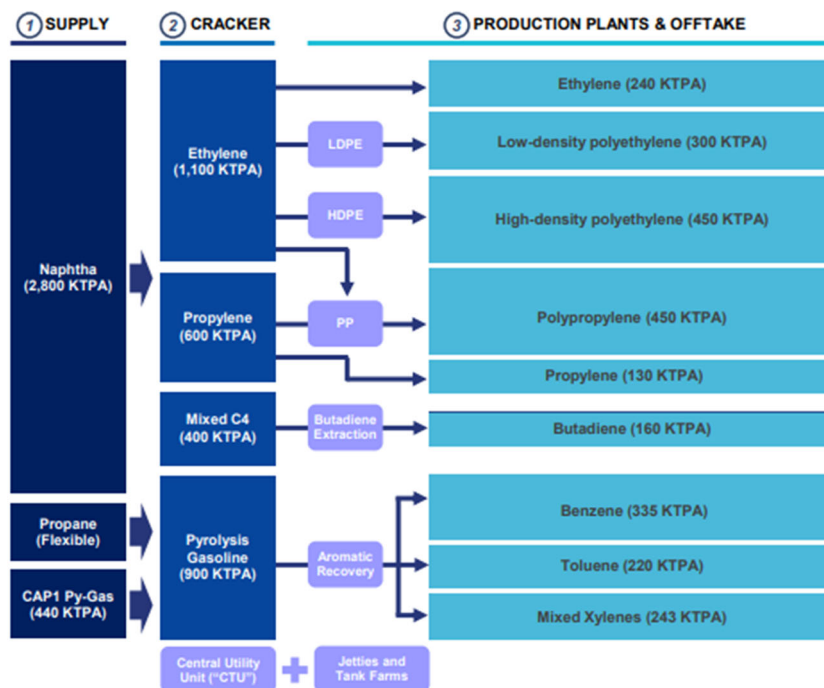
For downstream products, CAP2 will have more capacity for producing aromatics, including benzene, toluene, and mixed xylene, which could be further converted into paraxylene, which has a higher value.

In contrast, CAP1 yields a number of by-products including pygas, crude C4, and butane-1, which all must be converted into value-added products. CAP2 will convert pygas into aromatics, which will enhance the profitability of the plant.

CAP2's feedstock flexibility: TOP's transformation #2. The most significant factor that differentiates CAP2 from CAP1 as a more competitive olefin producer is that CAP2 is designed to be able to consume up to 70% propane gas as feedstock. We think this will greatly improve CAP2's operational flexibility and result in much higher profitability if the strategy for feedstock optimisation is well implemented to benefit from the lower market price of feedstock gas vs naphtha.

Based on CAP1 and CAP2's combined total upstream capacity of 3.1mtpa and downstream capacity of 4.9mtpa, we estimate that the maximum percentage of gas used for CAP1&2's total feedstock requirements would be 39%, based on a 70% proportion of gas feedstock for CAP2 and 0% for CAP1.

Exhibit 13: CAP2 product flows and production capacity

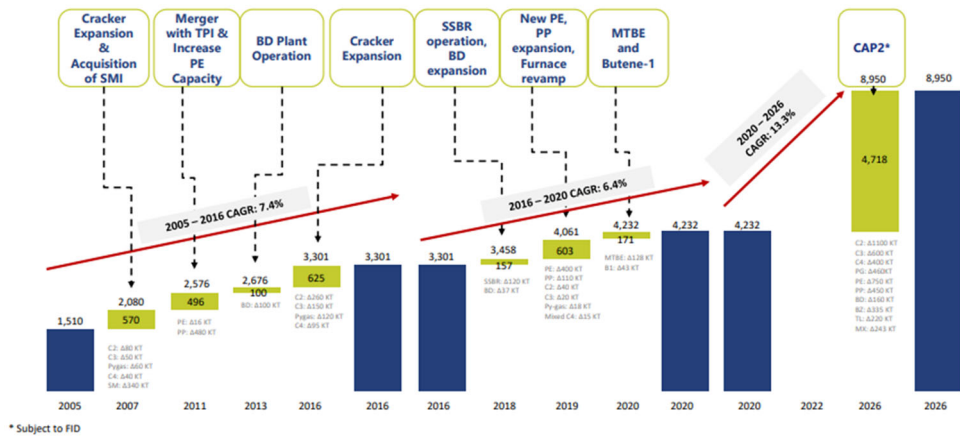


Sources: TOP; CAP

We believe the feedstock flexibility for CAP1&2 will be the most important factor for TOP's investment in CAP, given the highly unpredictable and volatile prices of both naphtha, which is driven by the crude oil price, and propane, which is driven by the LPG price.

According to CAP, CAP2 is scheduled to be completed and commence its COD in 1H24, the same year that TOP will complete its CFP upgrading unit. We think TOP's CFP will allow it to create greater synergies via naphtha sales as a key feedstock for CAP1 and CAP2, and further increase TOP's earnings growth and asset portfolio diversification.

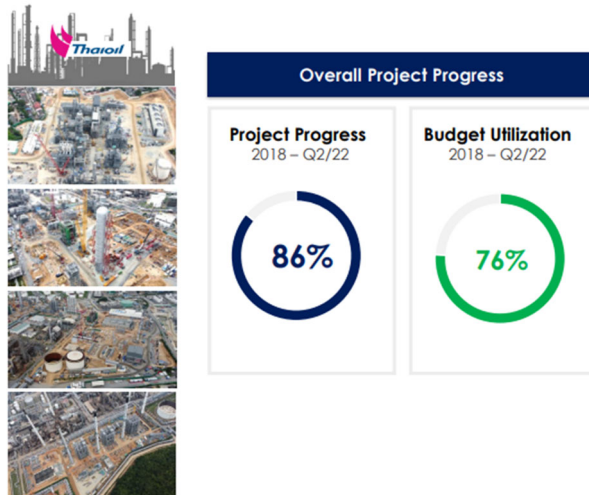
Exhibit 14: Growth targets for CAP2



Source: Chandra Asri; Note: 2026 figures are forecast by CAP

CAP2 is now on track to be completed in 2025, before commencing pre-commissioning and testing activities ahead of its official start-up in 2025. According to CAP, of the USD5b allocated for CAP2, CAP has already spent up to 71% of the total budget with construction now reaching 86% of completion as of 2Q22. We believe that CAP2, despite the delay caused by the Covid-19 pandemic in 2020-21, is on track to commence its COD in 2024.

Exhibit 15: CAP2 project schedule as of 2Q22



Source: TOP

Exhibit 16: TOP Group Strategic Investment Plan

CAPEX Plan (Unit US\$ million)

Updated as of July 2022

Project	Actual 1H/22	Estimated Budgeting for Investment Plan 2H/22 - 2025
CFP project *	282	1,140
Total Ongoing CAPEX	26	141
Reliability, Efficiency and Flexibility Improvement	5	48
Infrastructure Improvement (i.e. New Bangphra Raw Water Line, Jetty 7&8, Site office preparation for fire water & fire water improvement)	8	10
Other Investments (i.e. Corporate Venture Capital - CVC , Digital Transformation)	13	83
TOP SPP Expansion	25	72
Olefins Investment	-	270
Total CAPEX	333	1,623

* CAPEX of CFP Project including the disposal of asset to transfer ownership in the Energy Recovery Unit (ERU) which is a part of the CFP Project
Notes: Excluding approximately 40 M\$/year for annual maintenance

Source: TOP

CFP is a key strategic “game changer” for TOP’s refinery operation

We believe the CFP with an investment cost of USD5.4b will boost the capacity of TOP’s new crude distillation unit (CDU) #4 by 20kbpd to 220kbpd, bringing TOP’s total capacity to 400kbpd. TOP estimates the project’s IRR at 14%, higher than its corporate hurdle rate by 2 pts.

CFP: TOP’s transformation #3 for refinery upgrading and expansion.

Strategically, we think the CFP upgrade will strengthen TOP’s competitive position in the first quartile in terms of competitive cost and bolster its GRM vis-à-vis its global peers. The CFP investment will also enhance TOP’s operational competitiveness by adding upgrader units to its refinery complex and boost TOP’s Nelson complexity index from the current 9.8x to 12x. This would raise TOP’s 2025E GRM by USD5-6/bbl, comprising USD3-4/bbl from crude cost savings and USD2-3/bbl from higher product margins.

Financially, we see TOP’s move to invest in the CFP as positive. The higher investment cost of USD25k per bbl of capacity is justified by 1) the 7.5-year payback period and 14.4% IRR; 2) the USD5.0/bbl in cost savings gained by allowing TOP to raise its consumption of cheaper heavy crude from the current 2% to 50%; and 3) TOP’s enhanced GRM from the full conversion of its current 7% fuel oil yield into middle distillates (diesel and jet) which will increase its middle distillate yield to 61% from 55% currently.

Exhibit 17: Analysis of CFP’s projected financial returns

Project: CFP upgrading and expansion	Fuel oil (bpd)	Capacity (bpd)	Capacity (m bbls)	% fuel oil yield (%)
Existing capacity	19,250	275,000	100	7
Incremental capacity	8,750	125,000	46	7
Total	28,000	400,000	146	
Assumptions				
Diesel-fuel oil spread (USD/bbl)	20.0	20.0		
TOP’s existing crude premium (USD/bbl)	5.0	5.0		
Light-super heavy crude premium (USD/bbl)	15.0	15.0		
Average net crude saving (USD/bbl)	5.0	5.0		
% heavy crude consumption pre CFP expansion (%)	0	0		
% heavy crude consumption post CFP expansion (%)	50	50		
Net gross profit increase				
	Existing (275kbpd)	Expansion (125kbpd)	Total (400kbpd)	
#1 Product margin improvement (HSFO-to-diesel) (USD m)	141	64	204	
#1 Product margin improvement (HSFO-to-diesel) (THB m)	4,637	2,108	6,745	
#2 Crude cost saving (from 0% to 50% heavy crude) (USD m)	502	228	730	
#2 Crude cost saving (from 0% to 50% heavy crude) (THB m)	16,562	7,528	24,090	
Total benefit #1 plus #2 (USD m)	642	292	934	
Total benefit #1 plus #2 (THB m)	21,199	9,636	30,835	
	(USD m)	(THB m)		
Total benefit	934	30,835		
Additional OPEX	(44)	(1,445)		
Interest expense	(170)	(5,613)		
Net benefit before tax and depreciation	721	23,777		
Investment cost	5,400	178,200		
Payback period (year)	7.5	7.5		
IRR (%)	14.4	14.4		
	(USD m)	(THB m)		
Net incremental EBITDA*	891	29,390		
Depreciation expense	(164)	(5,400)		
Interest expense	(170)	(5,613)		
EBT	557	18,377		
Tax at 20%	(111)	(3,675)		
CFP’s net profit contribution	445	14,701		
TOP’s 2021 net profit	381	12,578		
CFP’s net profit as % of TOP’s 2021 net profit (%)	116.9	116.9		

* EBITDA = Sales – Cost of goods sold – operating cost; Non-GAAP earnings definition

Sources: TOP; FSSIA estimates

Under different assumptions for the diesel over high sulphur fuel oil (HSFO) price gap and the differential between the price of Brent light crude over super-heavy crude mainly from South American producers including Venezuela, our analysis indicated that the IRR, payback period, and net profit generated from the CFP will be highly attractive under the assumption of a diesel-HSFO spread of over USD20/bbl and a Brent-super heavy crude price gap of over USD15/bbl.

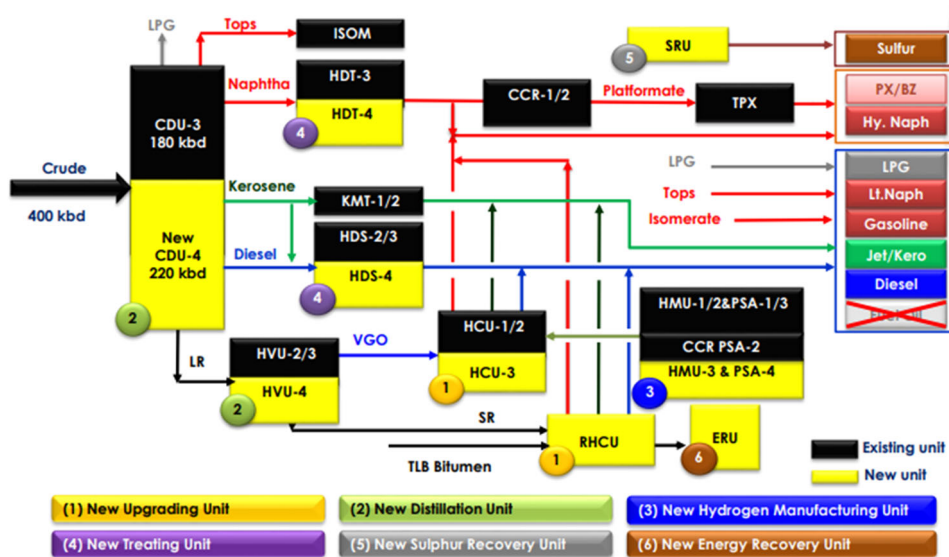
Exhibit 18: Financial returns for CFP under different scenarios

	Scenario 1 (Worst case)	Scenario 2	Scenario 3	Scenario 4 (Base case)	Scenario 5
Diesel-fuel oil spread (USD/bbl)	10	15	20	20	20
Light-super heavy crude premium (USD/bbl)	10	10	10	15	20
IRR (%)	7.3	8.1	8.9	14.4	19.8
Payback period (year)	21.3	17.7	15.2	7.5	5.0
CFP's net profit contribution (THB b)	2.4	3.7	5.1	14.7	24.3

Sources: TOP; FSSIA estimates

However, we found that the most important factor for the CFP's profitability is the crude price differential of light over super heavy crude, which is estimated to contribute over three-quarters of the total benefit from the CFP as its crude intake will be much higher for the new crude distillation unit #4 (CDU-4) at 220kbpd vs the 180kbpd capacity of CDU-3. Both CDU-1 and CDU-2 are to be mothballed after the COD of CDU-4 given their low operational efficiency and subscale production size.

Exhibit 19: Scope of CFP & technical aspects



Source: TOP

Capacity will increase by 45%, along with a 22 ppt higher upgrading ratio. CFP will enhance TOP's refinery plant by:

- 1) adding the new, larger CDU-4 with a capacity of 220kbpd to replace the inefficient CDU-1 and CDU2, effectively increasing the capacity by 45% from 275kbpd to 400kbpd;
- 2) improving the upgrading over CDU capacity ratio from the current 28% to 50% post CFP, resulting in zero HSFO yield. Instead, this fraction will be converted fully into other high-value products including diesel, jet, and gasoline;
- 3) adding a new 250MW ERU power plant with 175tph of steam capacity to be self-used by the new 400kbpd refinery plant, thereby reducing utility costs by over 15%, based on our estimate.

Exhibit 20: CFP competitiveness

Without CFP	With CFP
<ul style="list-style-type: none"> • CDU Capacity 275,000 bbl per day • Upgrading Ratio 28 % (upgrading capacity⁽¹⁾ over CDU capacity) 	<ul style="list-style-type: none"> • CDU Capacity 400,000 bbl per day • Upgrading Ratio 50% (upgrading capacity⁽²⁾ over CDU capacity) • Power Plant 250 MW

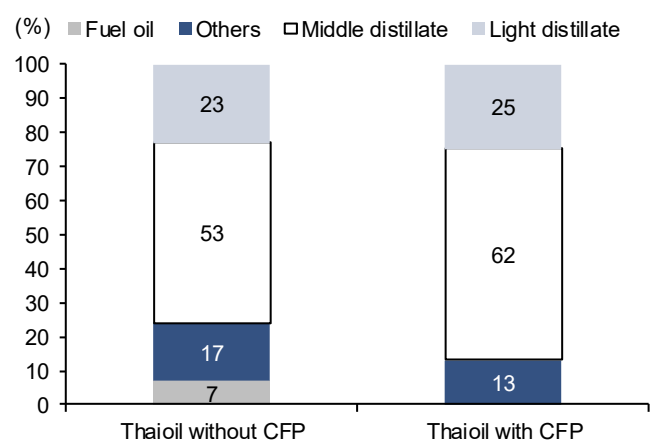
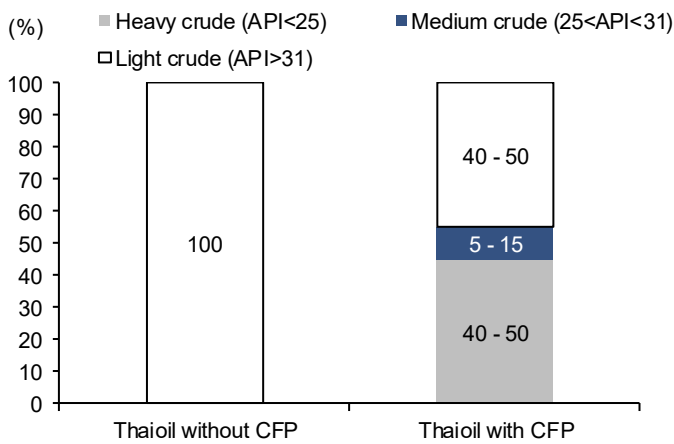
Remark : (1) including HCU 1/2, FCCU, TCU (2) including HCU 1/2/3, RHCU

Source: TOP

Production yield improvement with zero fuel oil. With a higher upgrading ratio from the additional new hydrocracker unit 3 (HCU-3) and residual HCU unit 1, TOP will be able to fully convert the low-value products, mostly fuel oil, into diesel and jet, resulting in zero fuel oil yield, higher yields of middle distillate from the current 53% to 62%, a higher gasoline yield from 23% to 25%, and lower by-product yields from 17% down to 13% post CFP. The change in production yield from the CFP should lead to a higher GRM by USD1-2/bbl depending on the price gap between diesel-HSFO.

Exhibit 21: Flexibility of crude intake

Exhibit 22: Product upgrading



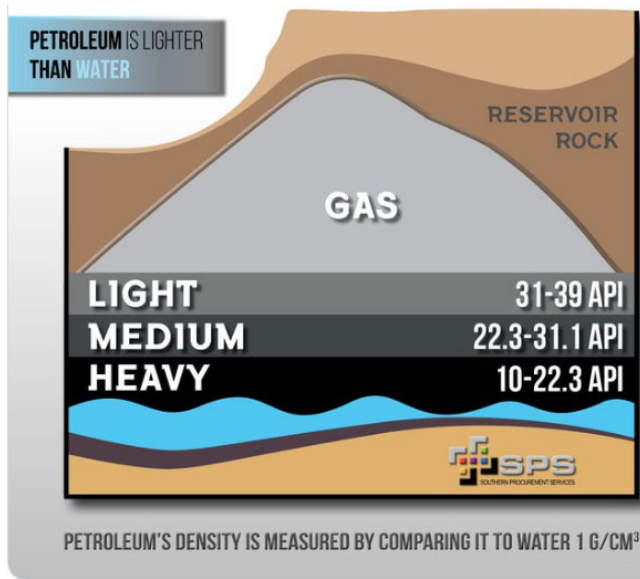
Source: TOP

Source: TOP

The greatest benefit is from the crude mix change. The most significant benefit of CFP will come from the ability to increase the proportion of super heavy crude to up to 50% of total crude intake, up from zero. Currently, TOP buys light and medium crude types with an American Petroleum Institute (API) gravity index of over 22.3, whose prices are significantly higher than heavy or super heavy crudes with an API below 22.3, thanks to the impact of Russia’s invasion of Ukraine which has resulted in lower supplies of light and medium crude types.

API classification by crude type. According to [The Petroleum Solutions](#), crude oil is broadly classified into light & heavy types based on density, and whether it is sweet (sulphur less than 0.5%) or sour (over 0.5% sulphur content) using the level of sulphur content. Based on density or specific gravity, crude oil is classified as light, medium, heavy or super or extra heavy. The API compares the density of crude oil to water in determining its API gravity. Crude oil with an API gravity greater than 10 is lighter and floats on water, while crude with an API gravity of less than 10 indicates that it is heavier than water and sinks.

Exhibit 23: Crude classification by API



Source: thepetrosolutions.com

However, in the oil & gas industry, the major classification of light vs heavy crudes is based on 1) API over 31.1 for light; 2) API 22.3-31.1 range for medium; 3) API 10-22.3 range for heavy crude; and 4) API below 10 for extra heavy.

For CFP, the ability to change from light crude with API over 31.1 to the heavy and extra heavy crudes with API lower than 22.3, would result in significant savings in terms of crude cost, which we estimate to account for around two-thirds of the total benefit from the upgrade.

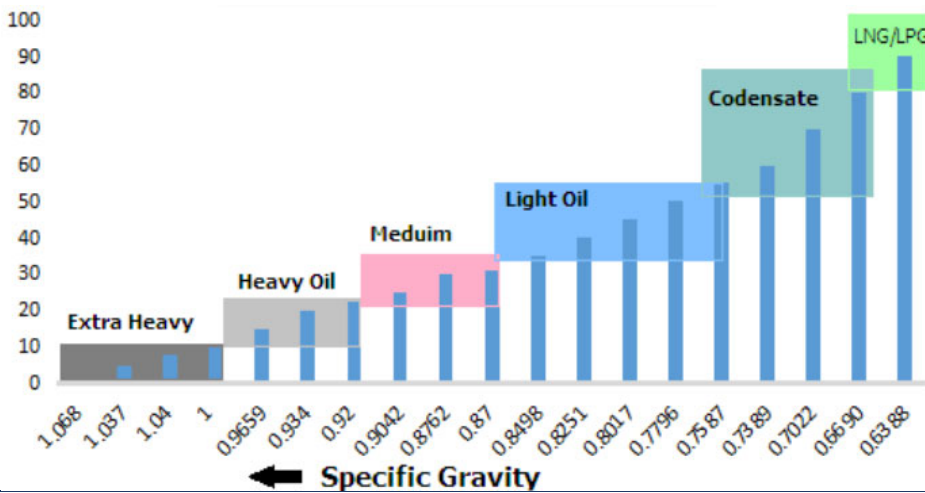
Exhibit 24: Crude classification by API



Crude Type	API Gravity	Specific Gravity
Light Crude	>31.1	<0.87
Medium Crude	22.3~31.1	0.92~0.87
Heavy Crude	10~22.3	1.0~0.92
Extra Heavy	<10	<1.0

Source: thepetrosolutions.com

Exhibit 25: API gravity vs specific gravity

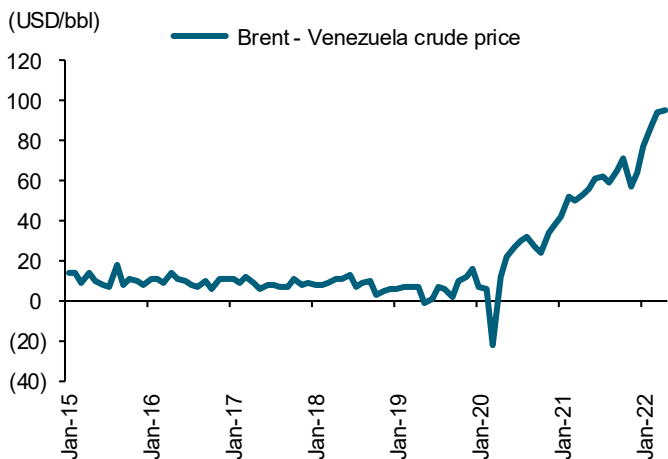


Source: thepetrosolutions.com

Current factors for CFP. At present, the gap between the light crude price, represented by the Brent crude benchmark price over the super heavy crude price, proxied by the Venezuela crude price, has spiked from sub-USD20/bbl to the current USD80/bbl, mainly due to the tighter supply of light crude on the rising supply risks for Russian crude while the supply of super heavy crude remains lacklustre as a result of sanctions imposed by the US and its allies against Venezuela, the world's largest producer of super heavy crude with production of over 2mbpd prior to the sanctions.

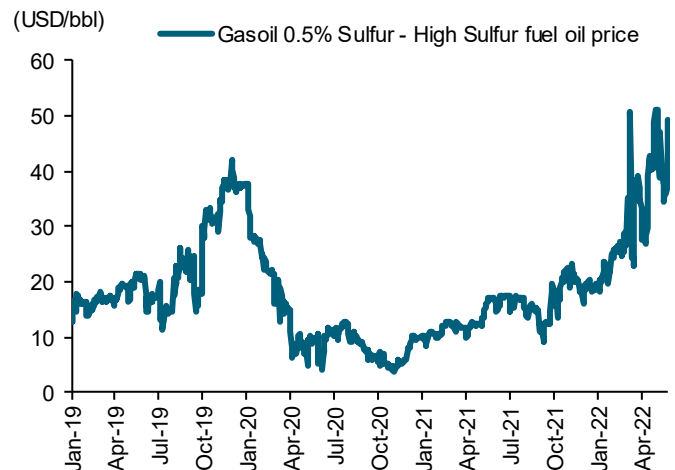
Similarly, the diesel over HSFO price gap has jumped markedly since 4Q21 owing to the shortage of Russian crude for European refiners, the sharp drop in China's exports of diesel and gasoline, and stronger demand thanks to the global economic recovery.

Exhibit 26: Brent - Venezuela crude price



Source: Bloomberg

Exhibit 27: Gasoil 0.5% sulphur fob SG spot price - High sulphur fuel oil spot price fob Singapore

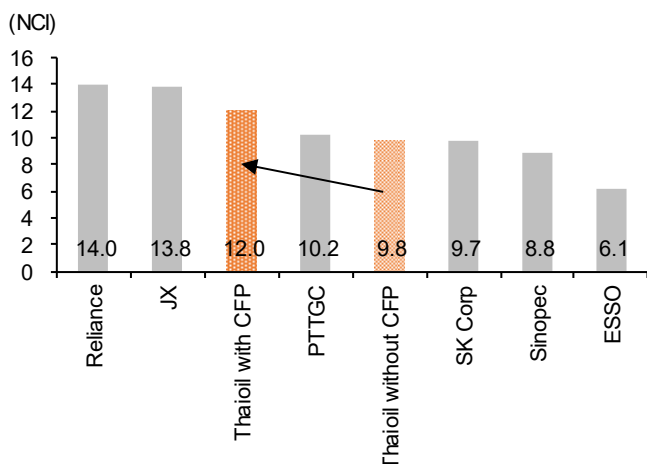


Source: Bloomberg

Upsides for CFP. If we use the USD40/bbl price gap for light-super heavy crude (vs USD80/bbl currently) and diesel-HSFO (vs USD50/bbl currently), we find that TOP's CFP would generate a hefty 56.9% IRR vs only 18.2% for our base case under the assumptions of USD15/bbl light-super heavy crude and a USD20/bbl price gap for diesel-HSFO.

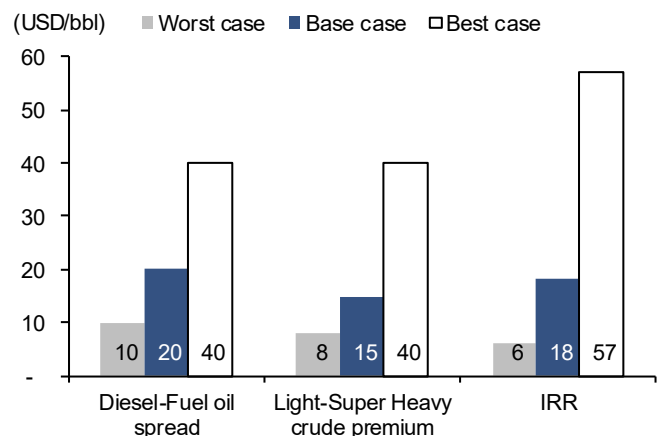
Even under our worst-case scenario of USD10/bbl for the price gap of diesel-HSFO and USD8/bbl for light-super heavy crude, we find that the IRR for CFP would only drop to 6.2%, which is still acceptable considering that the USD10/bbl and USD8/bbl price gaps are unlikely to occur, let alone be sustained, in our view.

Exhibit 28: Nelson Index - regional comparison



Source: TOP's research analyst presentation

Exhibit 29: Financial returns of CFP under three key scenarios

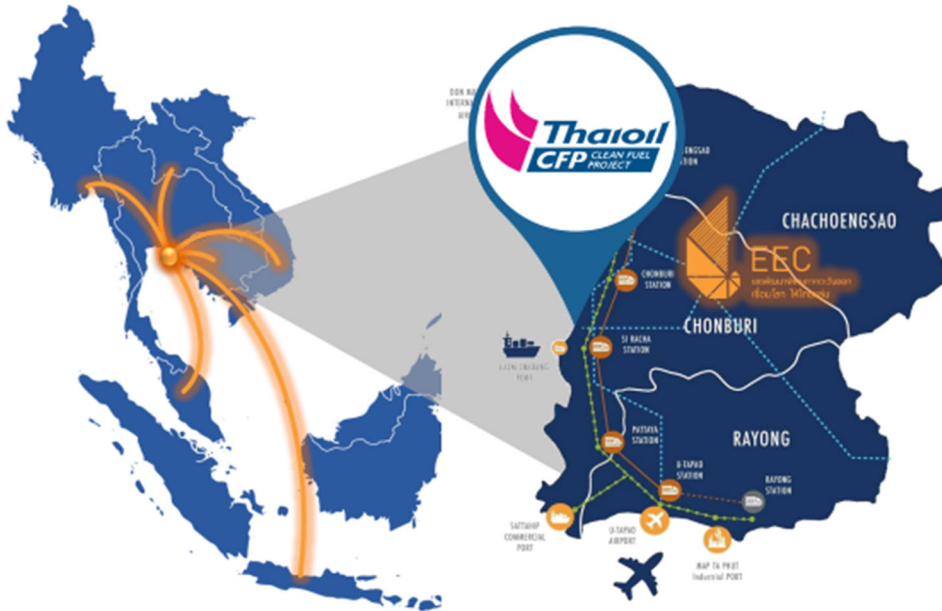


Sources: TOP; FSSIA estimates

Market opportunity for CFP. TOP plans to export its refined oil products to ASEAN markets, including Indonesia, where TOP has already established a footprint via CAP. Most ASEAN countries, including Indonesia, Cambodia, Myanmar, Laos, and Vietnam, remain importers thanks to their under-investment in the refinery sector.

In addition, with its proximity to the Eastern Economic Corridor (EEC) investment zone and a new government campaign to promote Thailand’s long-term industrial growth, we think TOP should see higher demand for refined oils from industrial users post 2024 when we expect the EEC to see increased development of industrial estates and new foreign direct investment.

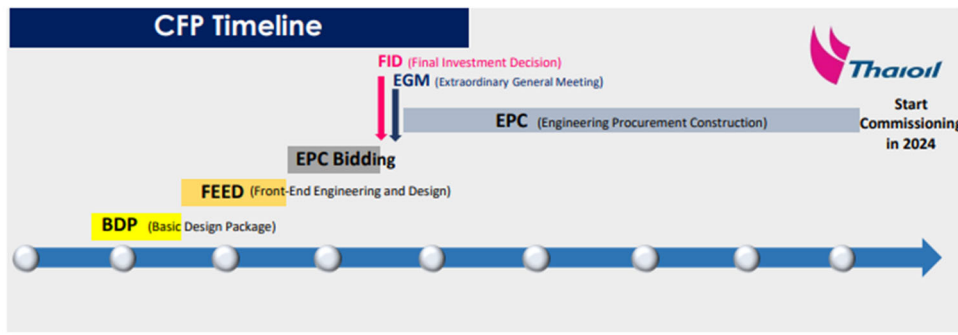
Exhibit 30: CFP strategically located in AEC & EEC



Source: TOP

CFP timeline. According to TOP, the CFP upgrade is now on track to be completed in 2024 and commence its COD in 2025. TOP has already invested USD4.2b in the CFP as of 2Q22 and still has USD1.2b remaining in its budget to complete the project. With the funding for the CFP already earmarked by TOP, the capital from the new shares issued (USD0.3b) and the cash raised from the divestment of GPSC (USD0.6b), coupled with internal cash flow generation, will mostly be used to repay bridging loans and bank loans used to fund the USD1.2b acquisition cost of the 15.38% stake in CAP.

Exhibit 31: CFP & ERU carve-out timeline



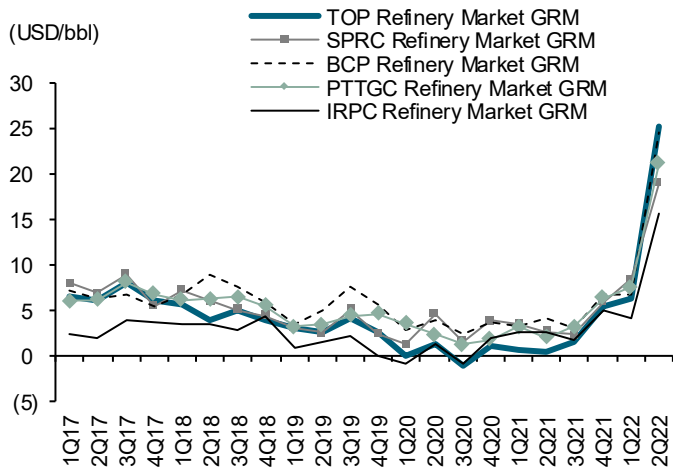
Source: TOP

Refinery upcycle projected in 2022-24 ahead of CFP and CAP start-ups

Since 4Q21, the global GRM has continued to rise, driven by tight supply and strong demand. The full economic reopening has led to a significant increase in global economic activity, particularly for travel, transportation, international flights, and industrial production – all being key drivers for the surging margins of gasoline (transportation), diesel (industry), and jet fuel (flights).

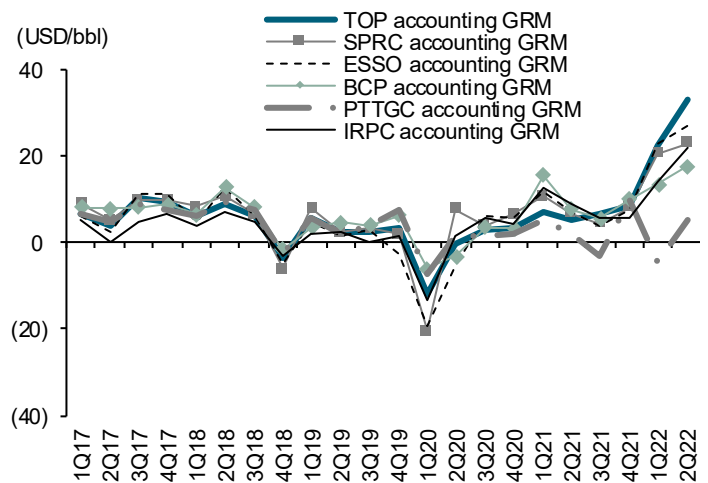
As a result, all six Thai refiners have enjoyed much higher GRMs in terms of both market GRM (operations) and accounting GRM (operations plus inventory gains/losses). Their market GRMs jumped from negative territory in 3Q20 during the peak of the global Covid-19 pandemic to USD15-25/bbl in 2Q22.

Exhibit 32: Refinery market GRM



Source: Companies

Exhibit 33: Accounting GRM

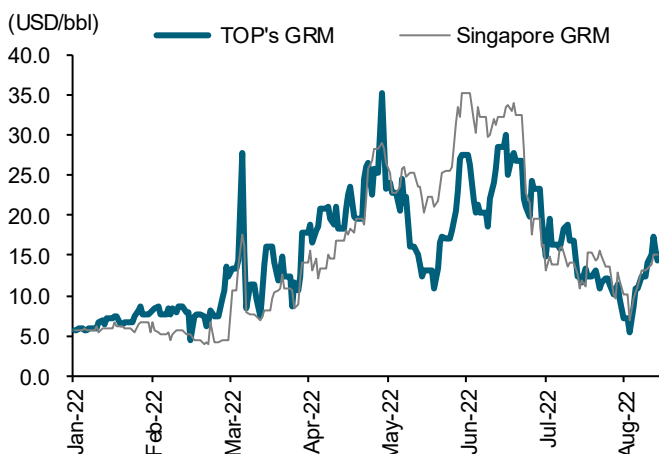


Source: Companies

Most Thai refiners have higher accounting GRMs than the benchmark Singapore GRM thanks to their superior production yields of diesel and jet (middle distillate). Hence, we think the market GRMs for Thai refiners in 2Q22 onward, excluding hedging gains/losses, should improve markedly both on a q-q and y-y basis.

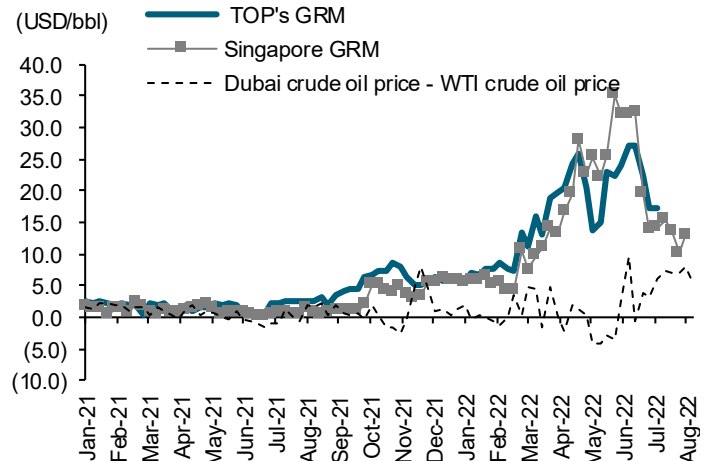
While TOP has seen its GRM mostly above the industry benchmark Singapore GRM due to TOP's superior production yields of diesel and jet, TOP's GRMs have underperformed its local peers, particularly Star Petroleum Refining (SPRC TB, BUY, TP THB14.60), Esso Thailand (ESSO TB, BUY, TP THB13), and Bangchak Corporation (BCP TB, BUY, TP THB41), as a result of the higher crude premium and its inability to reduce its jet fuel production yield during the Covid-19 pandemic in 2020-21 when the jet-Dubai margin fell to near zero.

Exhibit 34: TOP's GRM vs Singapore GRM (daily)



Source: Bloomberg

Exhibit 35: TOP's GRM vs Singapore GRM vs Dubai-WTI (weekly)

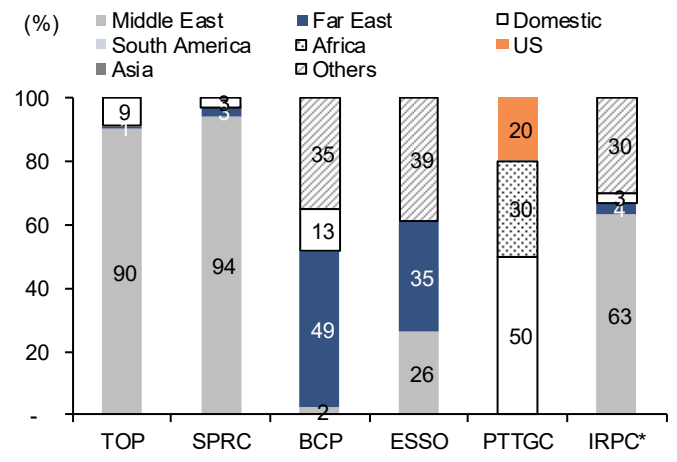
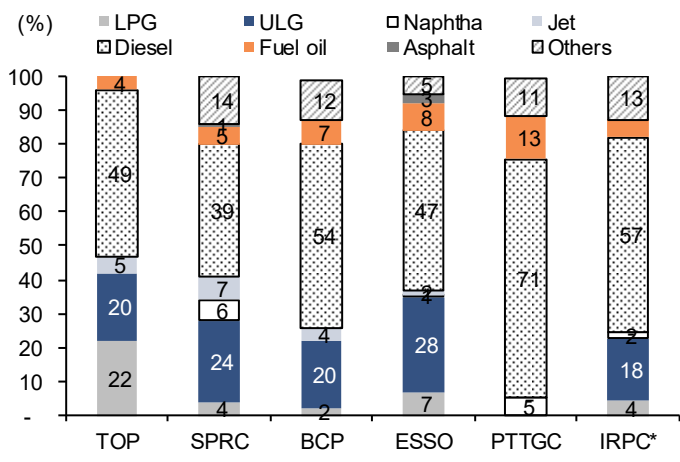


Source: Bloomberg

Similar to other refiners in PTT group (PTT Global Chemical (PTTGC TB, REDUCE, TP THB40) and IRPC (IRPC TB, HOLD, TP THB3.20)), we think TOP is more likely to see its crude costs soar than non-PTT refiners (SPRC, ESSO, and BCP), given its high proportion of Middle East crude supplies in the range of 88% for TOP.

Exhibit 36: Production yields of Thai refiners as of 2Q22

Exhibit 37: Crude mix breakdown of Thai refiners as of 2Q22



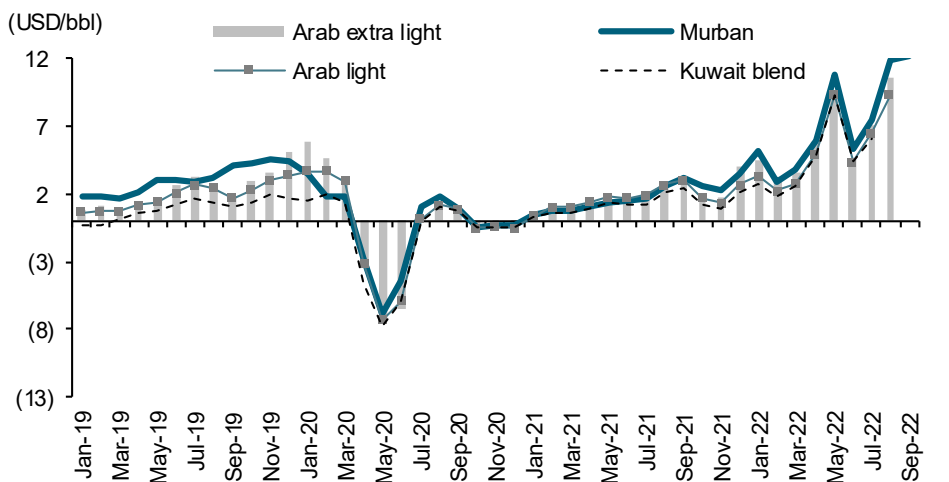
* IRPC as of 1Q22
Source: Companies

* IRPC as of 1Q22
Source: Companies

However, since Apr-22, Saudi Arabia, the leading oil producer in the OPEC+ group, has already started to lower its official selling price (OSP) crude premium for its crudes sold to the Asian market, as the risk of crude oil supply disruptions from Russia has not materialised since Russia invaded Ukraine in Feb-22.

We believe the lower crude premium, led by Saudi Arabia, should lead to lower crude premiums for other crude types from Middle Eastern producers, including the UAE's Murban, a key crude type used for 40-50% of TOP's crude intake. This should lead to a lower crude cost and higher market GRM in 2Q22 onward, based on our estimate.

Exhibit 38: Crude premiums of Middle Eastern producers



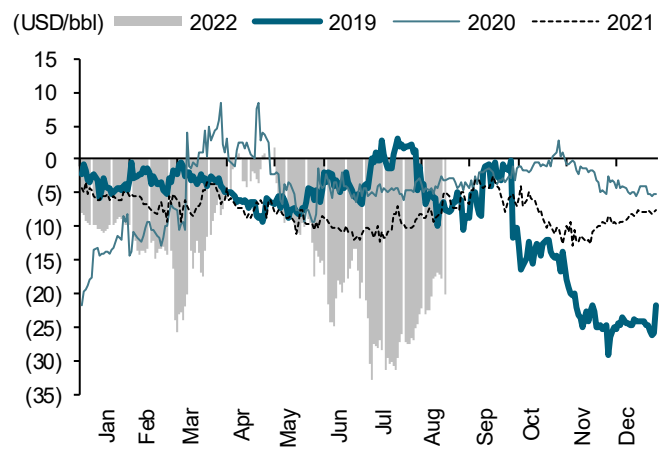
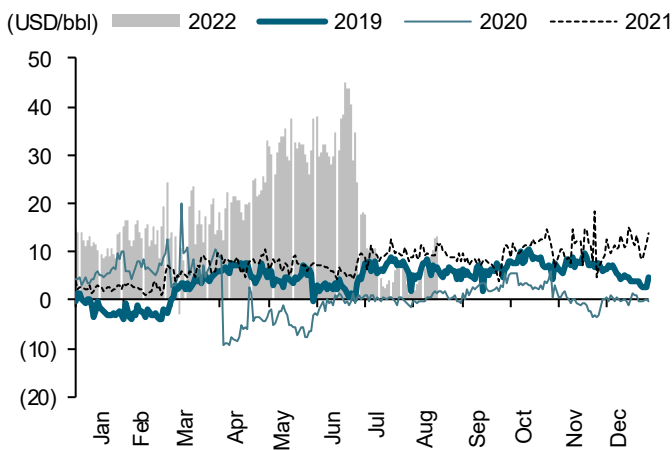
Source: TOP

Demand growth to further strengthen TOP’s GRM in 2022. Since Apr-22, the margins of refined oil products, including gasoline, HSFO, diesel, and jet fuel, have spiked markedly, driven by the tight supply and strong demand. The margin of ULG92 gasoline-Dubai jumped from below USD10/bbl in 1Q22 to over USD30/bbl in Apr-May 2022 and has since declined to USD10-15/bbl in Aug-22 due to the weaker demand after the US driving season.

In contrast to global demand, Thailand has seen a divergence in the demand growth for diesel vs gasoline as consumers with gasoline-powered cars reduced their consumption in 1Q22 due to the price spike caused by a higher tax on gasoline (THB3-5/litre) and the switch to electric vehicles (EVs) after the Thai government approved a subsidy package to encourage EV purchases and cut taxes on imported EVs.

Exhibit 39: 92 octane gasoline price – Dubai crude oil price

Exhibit 40: High sulphur fuel oil SG – Dubai crude price



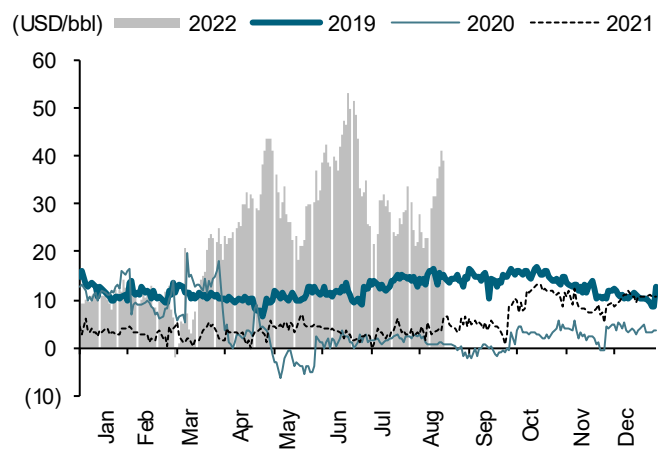
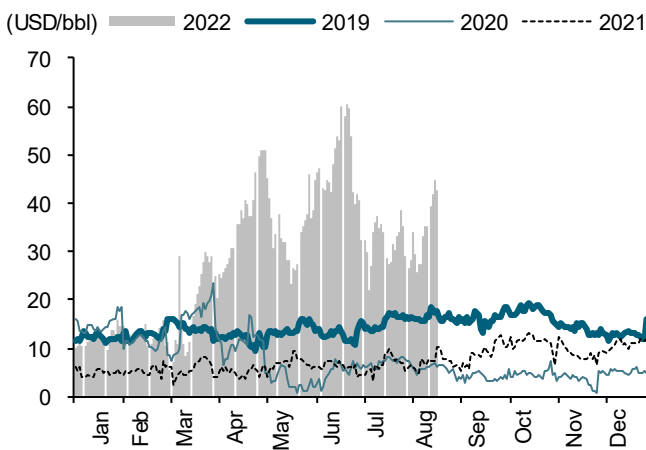
Source: Bloomberg

Source: Bloomberg

In contrast, demand for diesel, the key transportation fuel in Thailand, has continued to grow y-y – even surpassing the pre-Covid level in 2019 by almost 8% – thanks to the lower taxes on diesel compared to gasoline, based on data provided by the Department of Energy Business (DOEB). In addition, the Thai government capped the retail price of diesel at THB28/litre in 1Q22, rising to THB30/litre in Apr-22, and THB35/litre in May onward. Given the high yield of diesel at over 40% for all Thai refiners, the higher demand and margins should significantly boost the GRMs of Thai refiners in 2022.

Exhibit 41: Gasoil 0.5% sulphur fob SG spot price - Dubai crude oil price

Exhibit 42: Jet kerosene price – Dubai crude oil price



Source: Bloomberg

Source: Bloomberg

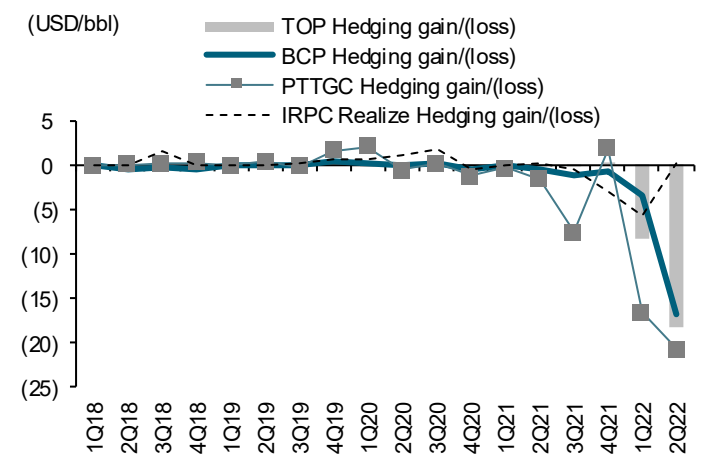
Two factors to watch in 2022: hedging losses and non-refinery earnings

Among the six Thai refiners, we think there are two key factors – hedging losses and non-refinery earnings – that should greatly differentiate their earnings from one another, and effectively allow the winners to fully capture the benefits of the GRM upcycle in 2022.

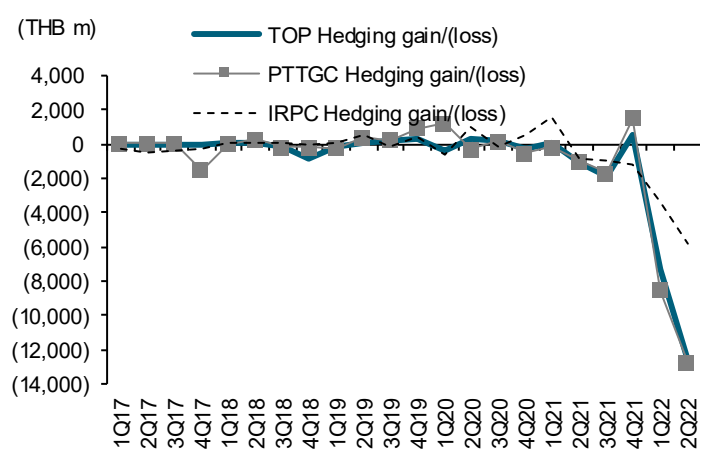
Factor #1: Hedging gains (losses). In 2Q22, all three refiners in the PTT group booked huge hedging losses. IRPC’s hedging loss was the lowest at THB3.4b (USD5.8/bbl), followed by TOP at THB7.4b (USD8.2/bbl), and PTTGC (USD16.6/bbl) with the most significant hedging loss amount. This is likely to continue in 3Q22 given that PTTGC has over 15mmbbl of hedging volume still outstanding, potentially leading to a USD15/bbl hedging loss in 2Q22, based on our estimate.

Unlike the two US-owned refiners SPRC and ESSO, which have no hedging policy, refiners under the PTT group (TOP, PTTGC, IRPC) have a broad hedging policy of 50% of their sales volume exposure in refined oil products.

Exhibit 43: Hedging gain (loss) per bbl for TOP, BCP, PTTGC, and BCP **Exhibit 44: Hedging gains (losses) for TOP, PTTGC, and IRPC**



Sources: TOP; BCP; PTTGC; IRPC



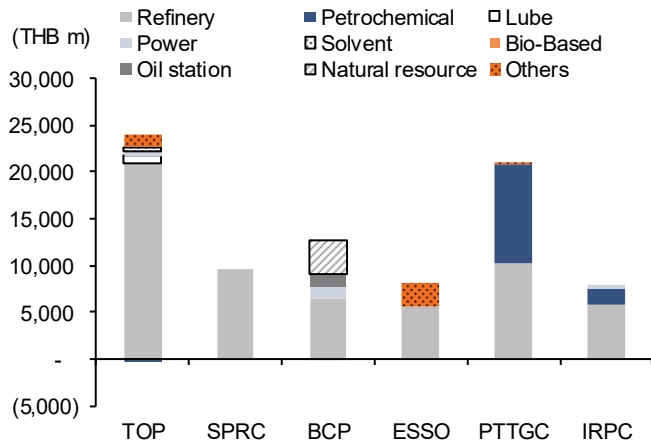
Sources: TOP; PTTGC; IRPC

Hence, TOP now has 40-50% of its sales volume in 1H22 and 20% in 2H22 hedged via forward contracts on Murban crude purchases, with the aim of protecting its GRM. PTTGC hedged c50% of its refined product sales volume in 9M22 with a lower hedging volume in 4Q22 as PTTGC plans to shut down its refinery CDU. IRPC has a hedging position of around 30-40% of its sales volume for refined oil products and thus could incur a significant hedging loss again in 2Q22.

Factor #2: Non-refinery earnings (net loss). In Thailand, only SPRC is a pure refinery play without any other businesses. ESSO has a fully integrated refinery-oil station portfolio while BCP has a much more diversified business portfolio with upstream exploration & production, refinery, biofuel, oil stations, and power.

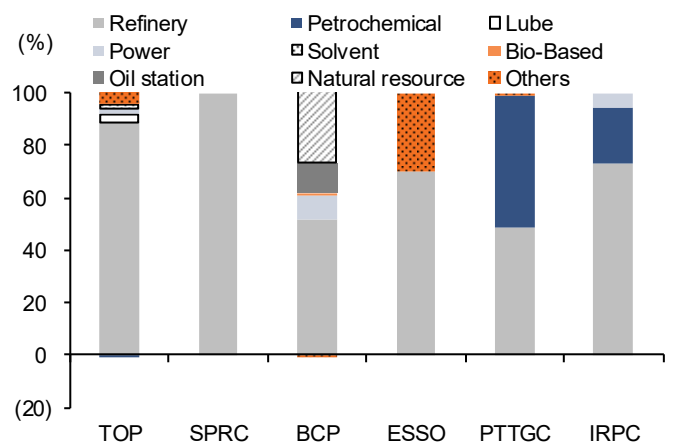
The refiners in PTT group have asset portfolios that are highly diversified to create more sustainable earnings over the long-term, based on management’s guidance. TOP has refinery, lube, aromatics, power, and biofuel operations while PTTGC and IRPC focus more on petrochemical businesses, with PTTGC as a leading producer of olefin products and aromatics. IRPC is a smaller integrated refinery and petrochemical producer focused on specialty aromatics products such as styrene monomer chains and polypropylene chains.

Exhibit 45: EBITDA breakdown of Thai refiners as of 2Q22



EBITDA = Sales – Cost of goods sold – operating cost; Non-GAAP earnings definition
Source: Companies

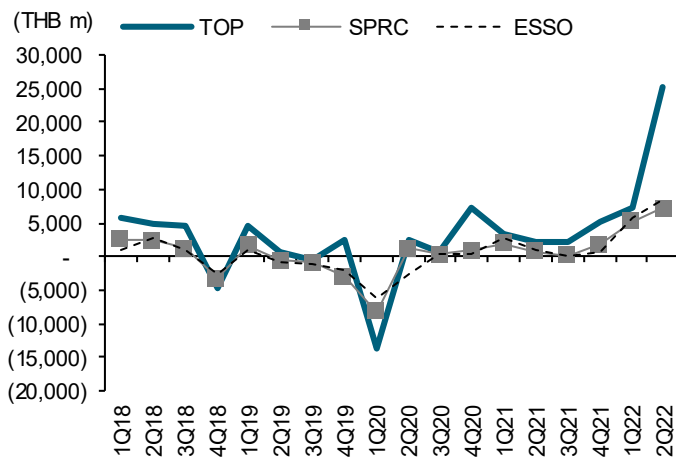
Exhibit 46: EBITDA breakdown of Thai refiners as of 2Q22 (%)



EBITDA = Sales – Cost of goods sold – operating cost; Non-GAAP earnings definition
Source: Companies

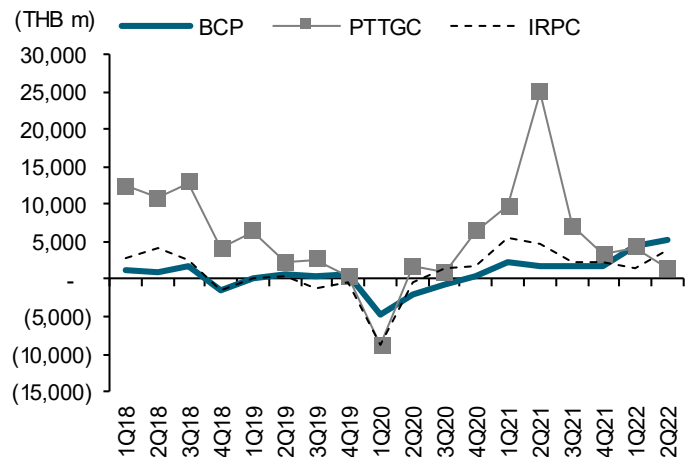
Expect earnings dilutions from aromatics, lube, and biofuels for TOP in 2022. As a result, we think TOP will not only suffer from projected large hedging losses, but also from diluted refinery earnings due to lower non-refinery business gains, including aromatics (margin downcycle in 2022-23), lube (weak demand and higher supply), and biofuels, both for ethanol and methyl ester (B100) due to the high cost of cassava and molasses feedstock for ethanol and palm oil for B100.

Exhibit 47: Quarterly net profits of TOP, SPRC, and ESSO



Sources: TOP; SPRC; ESSO

Exhibit 48: Quarterly net profits of BCP, PTTGC, and IRPC



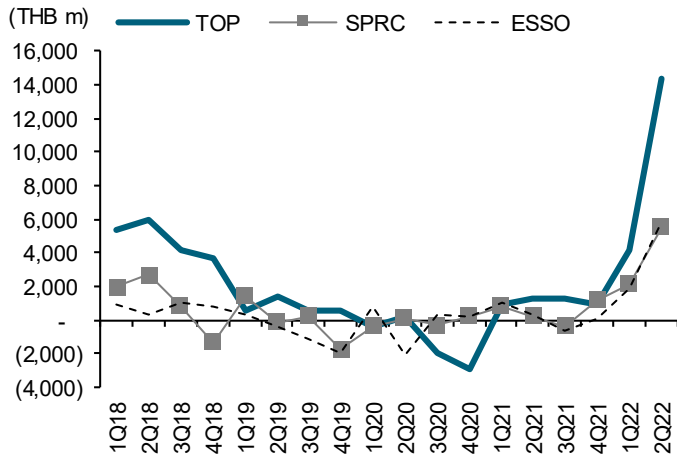
Sources: BCP; PTTGC; IRPC

Strong GRM should overshadow hedging losses in 3Q22-2022

Even with potentially large hedging losses, we think the stronger earnings from oil, the sharp rise in GRM, and the significant room for refinery utilisation rate increases to serve the rising demand for both domestic and export markets, should help sustain TOP's earnings in 3Q22 onward, based on our projections for the industry market GRM to remain high at above USD15/bbl in 2022.

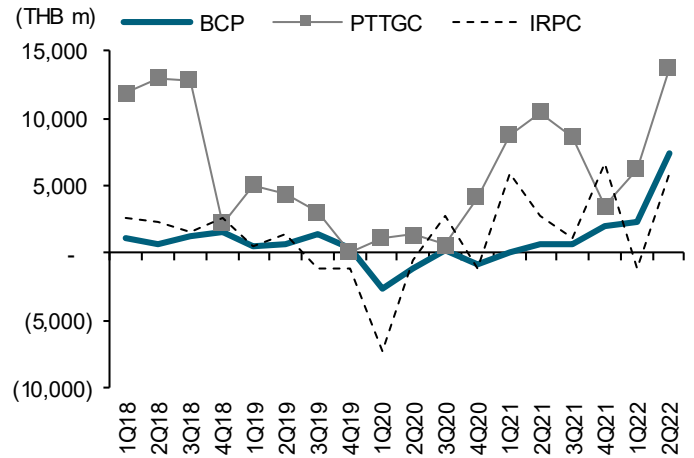
We expect product margins over the Dubai crude price to remain high, supported by stronger demand and continued tight supply, based on projections from the US Energy Information Administration.

Exhibit 49: Quarterly core net profits of TOP, SPRC, and ESSO



Sources: Companies; FSSIA estimates

Exhibit 50: Quarterly core net profits of BCP, PTTGC, and IRPC



Sources: Companies; FSSIA estimates

Valuation range post capital increase vs pre- and post-CFP. We derive our value for TOP using one-year and two-year forward EV/EBITDA, as we think TOP's earnings and the cash flows generated from its core refinery and other businesses are highly volatile and capex intensive with cash flows being approximated by EBITDA.

Values post capital increase and pre-CFP. We found that TOP's value ranges from THB107.8b (7x) to THB186.5b (9x) based on 2022E EV/EBITDA post capital increase but still excluding the benefit from CFP. The value range for TOP would decrease to THB80.2b (7x) to THB138.1b (9x) based on 2023E EV/EBITDA as we project TOP's EBITDA to rise and net debt of THB167.6b in 2022 and THB122.5b in 2023.

Values post capital increase and CFP. With CFP, we found that the value range would rise to THB199.7 (7x) to THB304.6b (9x) based on 2022E EV/EBITDA post capital increase and CFP. The value range would decline to THB172.1b (7x) to THB256.2b (9x) if based on 2023E EV/EBITDA.

Exhibit 51: Valuation ranges of TOP based on 2022E and 2023E EV/EBITDA with and without CFP benefit post capital increase

(THB m)	EBITDA*	Net debt	7.0	8.0	9.0	10.0	11.0	12.0
2022E	39,338	167,570	107,797	147,135	186,473	225,811	265,149	304,487
2023E	28,957	122,516	80,181	109,138	138,094	167,051	196,008	224,964
2022E - with CFP	52,463	167,570	199,674	252,138	304,601	357,065	409,528	461,992
2023E - with CFP	42,082	122,516	172,059	214,141	256,223	298,305	340,387	382,469

* EBITDA = Sales – Cost of goods sold – operating cost; Non-GAAP earnings definition

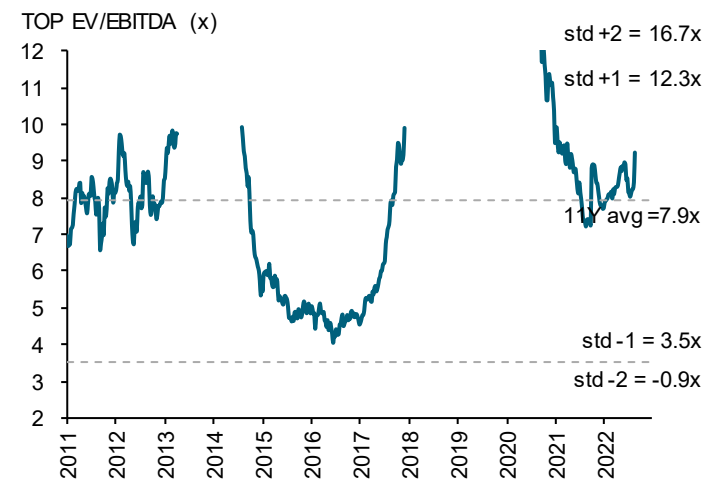
Sources: TOP; FSSIA estimates

Using TOP's 8.8x 2022E EV/EBITDA post capital increase and CFP would result in THB267.4b vs its current market cap range of THB117.9b as of 19 Aug-22.

However, we think the valuation range of TOP is likely to increase post CFP given the significant enhancements in its operational efficiency via superior crude flexibility, more lucrative production from higher middle distillate yields, and asset portfolio gains due to greater diversification into downstream olefins, penetration into Indonesia's high-growth market, and increased synergies among its refinery and petrochemical businesses.

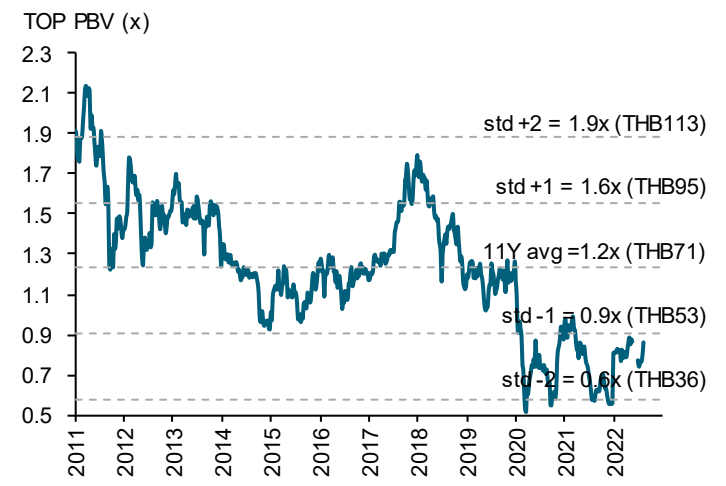
We see six key risks to our valuation for TOP, including 1) a sharp fall in oil price, which could result in a large inventory loss as the products' selling prices may not catch up with the sharp fall in the crude oil price; 2) weak demand for refined oil products due to high inflation and the global economic slowdown caused by the ongoing high prices of energy, food, and metals; 3) customer concentrations as TOP has a number of large customers; 4) currency risk due to its currently large interest-bearing debt of THB174b as of 2Q22 with around two-thirds being USD-denominated debts and one-third THB-denominated debts; 5) interest rate risk with 32% of total interest-bearing debt as floating rate debts; and 6) a raw material shortage on the back of the war or other supply disruptions.

Exhibit 52: TOP's prospective EV/EBITDA band



Sources: TOP; Bloomberg; FSSIA estimates

Exhibit 53: TOP's prospective P/BV band



Sources: TOP; Bloomberg; FSSIA estimates

Financial Statements

Thai Oil

Profit and Loss (THB m) Year Ending Dec	2020	2021	2022E	2023E	2024E
Revenue	242,840	335,827	536,209	476,521	470,840
Cost of goods sold	(247,746)	(312,131)	(491,991)	(443,228)	(437,343)
Gross profit	(4,906)	23,697	44,218	33,293	33,497
Other operating income	-	-	-	-	-
Operating costs	(2,650)	(3,056)	(4,880)	(4,337)	(4,285)
Operating EBITDA	(7,556)	20,640	39,338	28,957	29,212
Depreciation	(7,554)	(7,424)	(17,328)	(18,269)	(19,193)
Goodwill amortisation	0	0	0	0	0
Operating EBIT	(15,110)	13,216	22,010	10,688	10,019
Net financing costs	9,016	146	4,903	5,065	5,228
Associates	2,566	1,675	1,758	1,846	1,939
Recurring non-operating income	2,566	1,675	1,758	1,846	1,939
Non-recurring items	0	0	28,733	0	0
Profit before tax	(3,529)	15,037	57,404	17,599	17,186
Tax	647	(2,034)	(11,481)	(3,520)	(3,437)
Profit after tax	(2,882)	13,003	45,923	14,080	13,749
Minority interests	(419)	(425)	(425)	(425)	(425)
Preferred dividends	0	0	0	0	0
Other items	-	-	-	-	-
Reported net profit	(3,301)	12,578	45,498	13,654	13,324
Non-recurring items & goodwill (net)	0	0	(28,733)	0	0
Recurring net profit	(3,301)	12,578	16,765	13,654	13,324
Per share (THB)					
Recurring EPS *	(1.62)	6.17	8.22	6.69	6.53
Reported EPS	(1.62)	6.17	22.30	6.69	6.53
DPS	2.00	2.77	10.04	3.01	2.94
Diluted shares (used to calculate per share data)	2,040	2,040	2,040	2,040	2,040
Growth					
Revenue (%)	(32.9)	38.3	59.7	(11.1)	(1.2)
Operating EBITDA (%)	nm	nm	90.6	(26.4)	0.9
Operating EBIT (%)	nm	nm	66.5	(51.4)	(6.3)
Recurring EPS (%)	nm	nm	33.3	(18.6)	(2.4)
Reported EPS (%)	nm	nm	261.7	(70.0)	(2.4)
Operating performance					
Gross margin inc. depreciation (%)	(5.1)	4.8	5.0	3.2	3.0
Gross margin of key business (%)	(5.1)	4.8	5.0	3.2	3.0
Operating EBITDA margin (%)	(3.1)	6.1	7.3	6.1	6.2
Operating EBIT margin (%)	(6.2)	3.9	4.1	2.2	2.1
Net margin (%)	(1.4)	3.7	3.1	2.9	2.8
Effective tax rate (%)	18.3	13.5	20.0	20.0	20.0
Dividend payout on recurring profit (%)	(123.6)	45.0	122.1	45.0	45.0
Interest cover (X)	1.4	(102.0)	(4.8)	(2.5)	(2.3)
Inventory days	38.9	36.1	37.8	48.8	46.3
Debtor days	26.4	19.7	20.8	27.2	25.7
Creditor days	25.4	22.3	27.5	35.4	33.6
Operating ROIC (%)	(7.9)	5.8	7.9	3.8	3.6
ROIC (%)	(5.1)	4.9	5.6	2.7	2.9
ROE (%)	(2.8)	10.6	12.0	8.4	7.9
ROA (%)	(3.5)	3.9	3.1	2.0	1.8
* Pre-exceptional, pre-goodwill and fully diluted					
Revenue by Division (THB m)					
	2020	2021	2022E	2023E	2024E
Oil refinery	177,280	270,267	470,649	410,961	405,280
Lubed base oil refinery	19,501	19,501	19,501	19,501	19,501
Petrochemical	27,070	27,911	27,670	27,670	27,670
Power generation	6,071	5,230	5,471	5,471	5,471

Sources: Thai Oil; FSSIA estimates

Financial Statements

Thai Oil

Cash Flow (THB m) Year Ending Dec	2020	2021	2022E	2023E	2024E
Recurring net profit	(3,301)	12,578	16,765	13,654	13,324
Depreciation	7,554	7,424	17,328	18,269	19,193
Associates & minorities	-	-	-	-	-
Other non-cash items	-	-	-	-	-
Change in working capital	2,096	(8,611)	(20,441)	6,089	580
Cash flow from operations	6,349	11,392	13,653	38,012	33,096
Capex - maintenance	-	-	-	-	-
Capex - new investment	(38,666)	(33,174)	(18,140)	(17,598)	(17,531)
Net acquisitions & disposals	-	-	-	-	-
Other investments (net)	34,291	40,174	(39,000)	30,000	30,000
Cash flow from investing	(4,375)	6,999	(57,140)	12,402	12,469
Dividends paid	(3,060)	(5,660)	(20,474)	(6,145)	(5,996)
Equity finance	0	0	0	0	0
Debt finance	(2,363)	(1,219)	55,619	18,487	18,487
Other financing cash flows	(18,161)	(35,059)	33,668	2,271	2,364
Cash flow from financing	(23,584)	(41,939)	68,813	14,613	14,855
Non-recurring cash flows	-	-	-	-	-
Other adjustments	0	0	0	0	0
Net other adjustments	0	0	0	0	0
Movement in cash	(21,610)	(23,548)	25,326	65,027	60,421
Free cash flow to firm (FCFF)	6,265.67	21,985.74	(39,971.05)	53,852.25	48,925.32
Free cash flow to equity (FCFE)	(18,550.29)	(17,887.83)	45,799.74	71,171.96	66,416.28

Per share (THB)	2020	2021	2022E	2023E	2024E
FCFF per share	3.07	10.78	(19.59)	26.40	23.98
FCFE per share	(9.09)	(8.77)	22.45	34.89	32.56
Recurring cash flow per share	2.08	9.80	16.71	15.65	15.94

Balance Sheet (THB m) Year Ending Dec	2020	2021	2022E	2023E	2024E
Tangible fixed assets (gross)	279,568	320,167	338,307	355,905	373,436
Less: Accumulated depreciation	(134,343)	(141,768)	(159,096)	(177,365)	(196,558)
Tangible fixed assets (net)	145,225	178,399	179,212	178,541	176,878
Intangible fixed assets (net)	0	0	0	0	0
Long-term financial assets	-	-	-	-	-
Invest. in associates & subsidiaries	24,521	55,412	57,170	59,017	60,955
Cash & equivalents	53,244	29,696	55,021	120,049	180,469
A/C receivable	12,702	23,508	37,535	33,356	32,959
Inventories	22,461	39,295	62,741	55,757	55,092
Other current assets	25,822	8,740	8,740	8,740	8,740
Current assets	114,229	101,239	164,037	217,903	277,261
Other assets	22,213	27,094	97,377	64,946	32,331
Total assets	306,188	362,144	497,796	520,406	547,425
Common equity	116,229	120,881	158,285	165,795	173,123
Minorities etc.	3,889	2,213	2,415	2,615	2,815
Total shareholders' equity	120,118	123,094	160,700	168,410	175,938
Long term debt	135,958	163,343	220,476	240,476	260,476
Other long-term liabilities	21,491	37,230	56,926	56,926	56,926
Long-term liabilities	157,449	200,574	277,402	297,402	317,402
A/C payable	9,517	28,545	45,578	40,504	40,021
Short term debt	5,665	2,142	2,115	2,089	2,063
Other current liabilities	13,438	7,789	12,001	12,001	12,001
Current liabilities	28,620	38,476	59,694	54,594	54,085
Total liabilities and shareholders' equity	306,188	362,144	497,796	520,406	547,425
Net working capital	38,030	35,209	51,437	45,349	44,769
Invested capital	229,989	296,114	385,196	347,852	314,933

* Includes convertibles and preferred stock which is being treated as debt

Per share (THB)	2020	2021	2022E	2023E	2024E
Book value per share	56.97	59.25	77.59	81.27	84.86
Tangible book value per share	56.97	59.25	77.59	81.27	84.86


Financial strength	2020	2021	2022E	2023E	2024E
Net debt/equity (%)	73.6	110.3	104.3	72.7	46.6
Net debt/total assets (%)	28.9	37.5	33.7	23.5	15.0
Current ratio (x)	4.0	2.6	2.7	4.0	5.1
CF interest cover (x)	(1.2)	(103.7)	(12.0)	(16.5)	(15.1)

Valuation	2020	2021	2022E	2023E	2024E
Recurring P/E (x) *	(36.8)	9.7	7.2	8.9	9.1
Recurring P/E @ target price (x) *	(43.3)	11.4	8.5	10.5	10.7
Reported P/E (x)	(36.8)	9.7	2.7	8.9	9.1
Dividend yield (%)	3.4	4.7	16.9	5.1	4.9
Price/book (x)	1.0	1.0	0.8	0.7	0.7
Price/tangible book (x)	1.0	1.0	0.8	0.7	0.7
EV/EBITDA (x) **	(28.3)	12.6	7.4	8.5	7.1
EV/EBITDA @ target price (x) **	(31.1)	13.6	8.0	9.3	7.8
EV/invested capital (x)	0.9	0.9	0.8	0.7	0.7

* Pre-exceptional, pre-goodwill and fully diluted ** EBITDA includes associate income and recurring non-operating income

Sources: Thai Oil; FSSIA estimates

Corporate Governance report of Thai listed companies 2021

 EXCELLENT LEVEL – Score range 90-100										
AAV	BCPG	CPALL	GCAP	K	MSC	PLANET	SAMART	SPI	THRE	TVD
ADVANC	BDMS	CPF	GFPT	KBANK	MST	PLAT	SAMTEL	SPRC	THREL	TVI
AF	BEM	CPI	GGC	KCE	MTC	PORT	SAT	SPVI	TIPCO	TVO
AH	BGC	CPN	GLAND	KKP	MVP	PPS	SC	SSSC	TISCO	TWPC
AIRA	BGRIM	CRC	GLOBAL	KSL	NCL	PR9	SCB	SST	TK	U
AKP	BIZ	CSS	GPI	KTB	NEP	PREB	SCC	STA	TKT	UAC
AKR	BKI	DDD	GPSC	KTC	NER	PRG	SCCC	STEC	TMT	UBIS
ALT	BOL	DELTA	GRAMMY	LALIN	NKI	PRM	SCG	STI	TNDT	UV
AMA	BPP	DEMCO	GULF	LANNA	NOBLE	PROUD	SCGP	SUN	TNITY	VGI
AMATA	BRR	DRT	GUNKUL	LH	NSI	DRSH	SCM	SUSCO	TOA	VIH
AMATAV	BTS	DTAC	HANA	LHFG	NVD	PSL	SDC	SUTHA	TOP	WACOAL
ANAN	BTW	DUSIT	HARN	LIT	NWR	PTG	SEAFCO	SVI	TPBI	WAVE
AOT	BWG	EA	HMPRO	LPN	NYT	PTT	SEAOIL	SYMC	TQM	WHA
AP	CENTEL	EASTW	ICC	MACO	OISHI	PTTEP	SE-ED	SYNTEC	TRC	WHAUP
ARIP	CFRESH	ECF	ICHI	MAJOR	OR	PTTGC	SELIC	TACC	TRU	WICE
ARROW	CHEWA	ECL	III	MAKRO	ORI	PYLON	SENA	TASCO	TRUE	WINNER
ASP	CHO	EE	ILINK	MALEE	OSP	Q-CON	SHR	TCAP	TSC	ZEN
AUCT	CIMBT	EGCO	ILM	MBK	OTO	QH	SIRI	TEAMG	TSR	
AWC	CK	EPG	INTUCH	MC	PAP	QTC	SIS	TFMAMA	TSTE	
AYUD	CKP	ETC	IP	MCOT	PCSGH	RATCH	SITHAI	TGH	TSTH	
BAFS	CM	FPI	IRPC	METCO	PDG	RS	SMK	THANA	TTA	
BANPU	CNT	FPT	ITEL	MFEC	PDJ	S	SMPC	THANI	TTB	
BAY	COM7	FSMART	IVL	MINT	PG	S & J	SNC	THCOM	TTCL	
BBL	COMAN	GBX	JSP	MONO	PHOL	SAAM	SONIC	THG	TTW	
BCP	COTTO	GC	JWD	MOONG	PLANB	SABINA	SPALI	THIP	TU	

 VERY GOOD LEVEL – Score range 80-89										
2S	ASIMAR	CHOW	FLOYD	IT	LOXLEY	OCC	RPC	SKY	TCC	TVT
7UP	ASK	CI	FN	ITD	LRH	OGC	RT	SLP	TCMC	TWP
ABICO	ASN	CIG	FNS	J	LST	PATO	RWI	SMIT	TEAM	UEC
ABM	ATP30	CMC	FORTH	JAS	M	PB	S11	SMT	TFG	UMI
ACE	B	COLOR	FSS	JCK	MATCH	PICO	SA	SNP	TFI	UOBKH
ACG	BA	CPL	FTE	JCKH	MBAX	PIMO	SAK	SO	TIGER	UP
ADB	BAM	CPW	FVC	JMART	MEGA	PJW	SALEE	SORKON	TITLE	UPF
AEONTS	BC	CRD	GEL	JMT	META	PL	SAMCO	SPA	TKN	UPOIC
AGE	BCH	CSC	GENCO	KBS	MFC	PM	SANKO	SPC	TKS	UTP
AHC	BEC	CSP	GJS	KCAR	MGT	PMTA	SAPPE	SPCG	TM	VCOM
AIT	BEYOND	CWT	GYT	KEX	MICRO	PPP	SAWAD	SR	TMC	VL
ALL	BFIT	DCC	HEMP	KGI	MILL	PPP	SCI	SRICHA	TMD	VPO
ALLA	BJC	DCON	HPT	KIAT	MTSIB	PRIME	SCN	SSC	TMI	VRANDA
ALUCON	BJCHI	DHOUSE	HTC	KISS	MK	PRIN	SCP	SSF	TMILL	WGE
AMANAH	BLA	DOD	HYDRO	KOOL	MODERN	PRINC	SE	STANLY	TNL	WIK
AMARIN	BR	DOHOME	ICN	KTIS	MTI	PSG	SFLEX	STGT	TNP	WP
APCO	BROOK	DV8	IFS	KUMWEL	NBC	PSTC	SFP	STOWER	TOG	XO
APCS	CBG	EASON	IMH	KUN	NCAP	PT	SFT	STPI	TPA	XPG
APURE	CEN	EFORL	IND	KWC	NCH	QLT	SGF	SUC	TPAC	YUASA
AQUA	CGH	ERW	INET	KWM	NETBAY	RBF	SIAM	SWC	TPCS	
ASAP	CHARAN	ESSO	INSET	L&E	NEX	RCL	SINGER	SYNEX	TPS	
ASEFA	CHAYO	ESTAR	INSURE	LDC	NINE	RICHY	SKE	TAE	TRITN	
ASIA	CHG	ETE	IRC	LEO	NRF	RML	SKN	TAKUNI	TRT	
ASIAN	CHOTI	FE	IRCP	LHK	NTV	ROJNA	SKR	TBSP	TSE	

 GOOD LEVEL – Score range 70-79										
A	BGT	CITY	GIFT	JTS	MDX	PK	SGP	SUPER	TQR	YGG
AI	BH	CMAN	GLOCON	JUBILE	MJD	PLE	SICT	SVOA	TTI	ZIGA
AIE	BIG	CMO	GREEN	KASET	MORE	PPM	SIMAT	TC	TYCN	
AJ	BLAND	CMR	GSC	KCM	MUD	PRAKIT	SISB	TCCC	UKEM	
ALPHAX	BM	CPT	GTB	KK	NC	PRAPAT	SK	THMUI	UMS	
AMC	BROCK	CRANE	HTECH	KKC	NDR	PRECHA	SMART	TNH	UNIQ	
APP	BSBM	CSR	HUMAN	KWI	NFC	PTL	SOLAR	TNR	UPA	
AQ	BSM	D	IHL	KYE	NNCL	RJH	SPACK	TOPP	UREKA	
ARIN	BTNC	EKH	IIG	LEE	NOVA	RP	SPG	TPCH	VIBHA	
AS	BYD	EMC	INGRS	LPH	NPK	RPH	SQ	TPIPL	W	
AU	CAZ	EP	INOX	MATI	NUSA	RSP	SSP	TIPIP	WIN	
B52	CCP	F&D	JAK	M-CHAI	PAF	SABUY	STARK	TPLAS	WORK	
BEAUTY	CGD	FMT	JR	MCS	PF	SF	STC	TPOLY	WPH	

Disclaimer:

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* CGR scoring should be considered with news regarding wrong doing of the company or director or executive of the company such unfair practice on securities trading, fraud, and corruption SEC imposed a civil sanction against insider trading of director and executive

Sources: Thai Institute of Directors Association (IOD); FSSIA's compilation; data as of 26 October 2021

Anti-corruption Progress Indicator

CERTIFIED										
2S	BCH	CPALL	GC	K	MFC	PE	QLT	SNP	THCOM	TU
7UP	BCP	CPF	GCAP	KASET	MFEC	PG	QTC	SORKON	THIP	TVD
ADVANC	BCPG	CPI	GEL	KBANK	MILL	PHOL	RATCH	SPACK	THRE	TVI
AF	BE8	CPN	GFPT	KBS	MINT	PK	RML	SPALI	THREL	TVO
AI	BEYOND	CSC	GGC	KCAR	MONO	PL	RWI	SPC	TIDLOR	TWPC
AIE	BGC	DCC	GJS	KCE	MOONG	PLANB	S & J	SPI	TIPCO	U
AIRA	BGRIM	DELTA	GPI	KGI	MSC	PLANET	SAAM	SPRC	TISCO	UBE
AKP	BJCHI	DEMCO	GPSC	KKP	MST	PLAT	SABINA	SRICHA	TKS	UBIS
ALPHAX	BKI	DIMET	GSTEEL	KSL	MTC	PM	SAPPE	SSF	TKT	UEC
AMA	BLA	DRT	GUNKUL	KTB	MTI	PPP	SAT	SSP	TMD	UKEM
AMANAHA	BPP	DTAC	HANA	KTC	NBC	PPPM	SC	SSSC	TMILL	UOBKH
AMATA	BROOK	DUSIT	HARN	KWC	NEP	PPS	SCB	SST	TMT	UPF
AMATAV	BRR	EA	HEMP	KWI	NINE	PR9	SCC	STA	TNITY	UV
AP	BSBM	EASTW	HENG	L&E	NKI	PREB	SCCC	STOWER	TNL	VGI
APCS	BTS	ECL	HMPRO	LANNA	NMG	PRG	SCG	SUSCO	TNP	VIH
AQUA	BWG	EGCO	HTC	LH	NNCL	PRINC	SCN	SVI	TNR	WACOAL
ARROW	CEN	EP	ICC	LHFG	NOBLE	PRM	SEAOIL	SYMC	TOG	WHA
AS	CENTEL	EPG	ICHI	LHK	NOK	PROS	SE-ED	SYNTEC	TOP	WHAUP
ASIAN	CFRESH	ERW	IFEC	LPN	NSI	PSH	SELIC	TAE	TOPP	WICE
ASK	CGH	ESTAR	IFS	LRH	NWR	PSL	SENA	TAKUNI	TPA	WIIK
ASP	CHEWA	ETE	ILINK	M	OCC	PSTC	SGP	TASCO	TPP	XO
AWC	CHOTI	FE	INET	MAKRO	OGC	PT	SINGER	TBSP	TRU	ZEN
AYUD	CHOW	FNS	INSURE	MALEE	ORI	PTG	SIRI	TCAP	TRUE	
B	CIG	FPI	INTUCH	MATCH	PAP	PTT	SITHAI	TCMC	TSC	
BAFS	CIMBT	FPT	IRC	MBAX	PATO	PTTEP	SKR	TFG	TSTE	
BAM	CM	FSMART	IRPC	MBK	PB	PTTGC	SMIT	TFI	TSTH	
BANPU	CMC	FSS	ITEL	MC	PCSGH	PYLON	SMK	TFMAMA	TTA	
BAY	COM7	FTE	IVL	MCOT	PDG	Q-CON	SMPC	TGH	TTB	
BBL	COTTO	GBX	JKN	META	PDJ	QH	SNC	THANI	TTCL	
DECLARED										
AJ	CHG	DDD	ETC	JR	MAJOR	NUSA	RS	SSS	TQM	YUASA
ALT	CPL	DHOUSE	FLOYD	JTS	NCAP	NYT	SAK	STECH	TSI	ZIGA
APCO	CPR	DOHOME	GULF	KEX	NCL	OR	SCGP	STGT	VARO	
B52	CPW	ECF	III	KUMWEL	NOVA	PIMO	SCM	TKN	VCOM	
BEC	CRC	EKH	INOX	LDC	NRF	PLE	SIS	TMI	VIBHA	

Level	
Certified	This level indicates practical participation with thoroughly examination in relation to the recommended procedures from the audit committee or the SEC's certified auditor, being a certified member of Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC) or already passed examination to ensure independence from external parties.
Declared	This level indicates determination to participate in the Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC)

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Note: Companies participating in Thailand's Private Sector Collective Action Coalition Against Corruption programme (Thai CAC) under Thai Institute of Directors (as of 26 October 2021) are categorised into: 1) companies that have declared their intention to join CAC, and; 2) companies certified by CAC.

Sources: The Securities and Exchange Commission, Thailand; * FSSIA's compilation

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ANALYST(S) CERTIFICATION

Suwat Sinsadok, CFA, FRM, ERP FSS International Investment Advisory Securities Co., Ltd

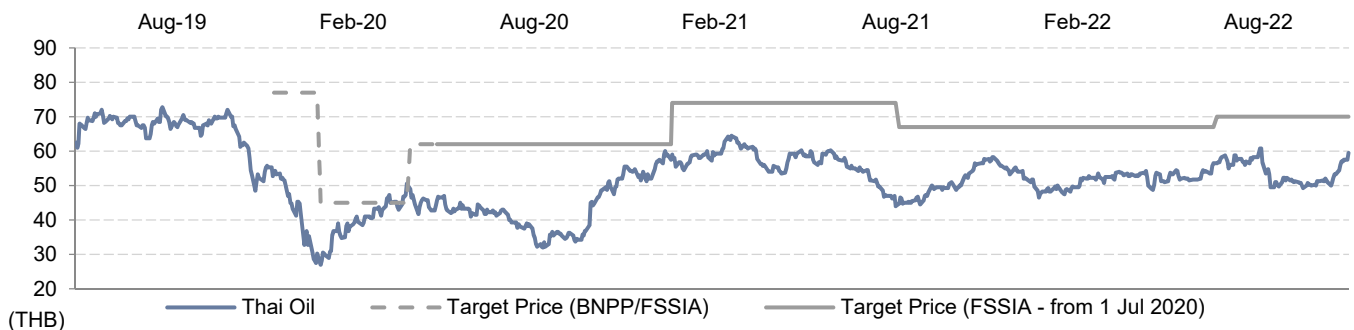
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History of change in investment rating and/or target price

Thai Oil (TOP TB)



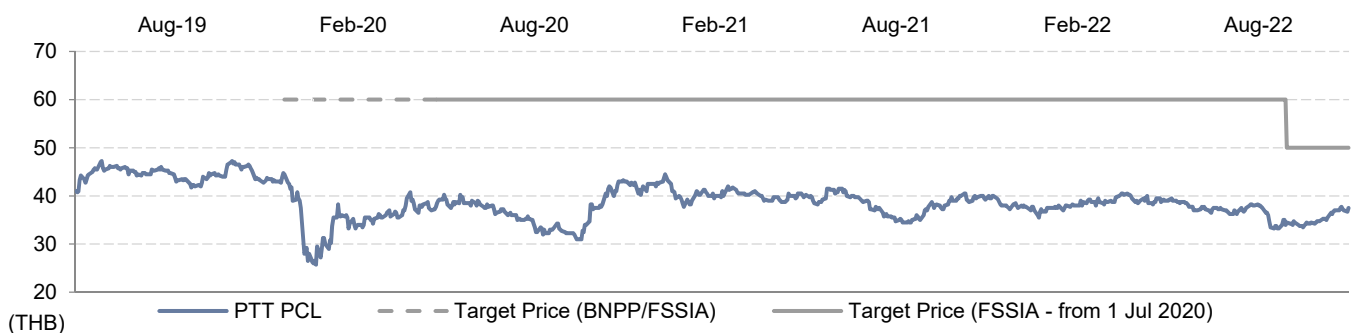
Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
12-Feb-2020	BUY	77.00	08-Jun-2020	BUY	62.00	30-Jul-2021	BUY	67.00
23-Mar-2020	BUY	45.00	18-Jan-2021	BUY	74.00	29-Apr-2022	BUY	70.00

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 08-Jun-2020

Price and TP are in local currency

Source: FSSIA estimates

PTT PCL (PTT TB)



Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
21-Feb-2020	BUY	60.00	30-Jun-2022	BUY	50.00	-	-	-

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 12-May-2020

Price and TP are in local currency

Source: FSSIA estimates

Global Power Synergy (GPSC TB)



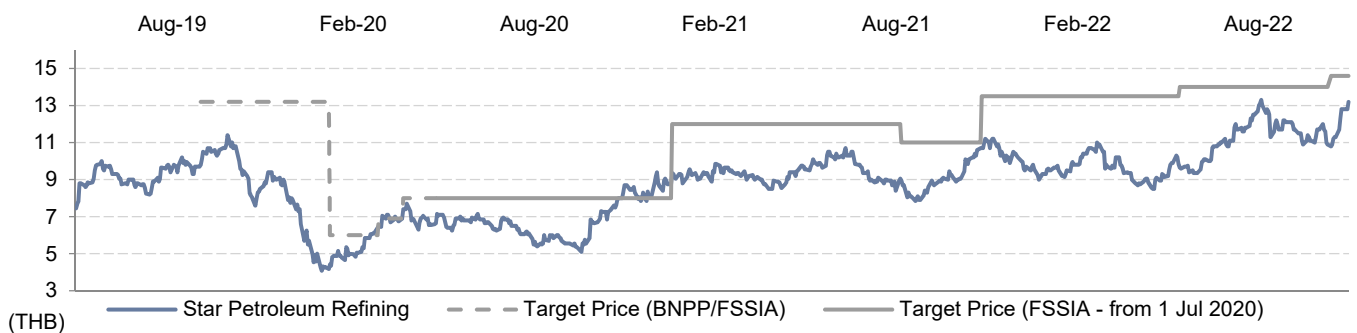
Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
17-Dec-2019	BUY	120.00	15-Jul-2021	BUY	112.00	06-May-2022	HOLD	70.00
08-Apr-2020	BUY	112.00	05-Aug-2021	BUY	100.00			
14-Jul-2021	BUY	110.00	07-Feb-2022	BUY	90.00			

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 08-May-2020

Price and TP are in local currency

Source: FSSIA estimates

Star Petroleum Refining (SPRC TB)



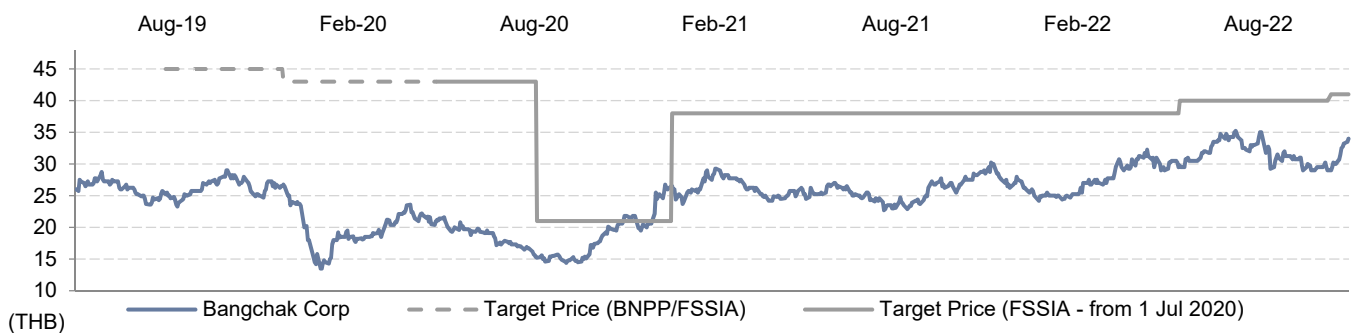
Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
11-Dec-2019	BUY	13.20	02-Jun-2020	BUY	8.00	11-Oct-2021	BUY	13.50
31-Mar-2020	BUY	6.00	18-Jan-2021	BUY	12.00	30-Mar-2022	BUY	14.00
12-May-2020	BUY	6.90	03-Aug-2021	BUY	11.00	05-Aug-2022	BUY	14.60

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 18-Jun-2020

Price and TP are in local currency

Source: FSSIA estimates

Bangchak Corp (BCP TB)



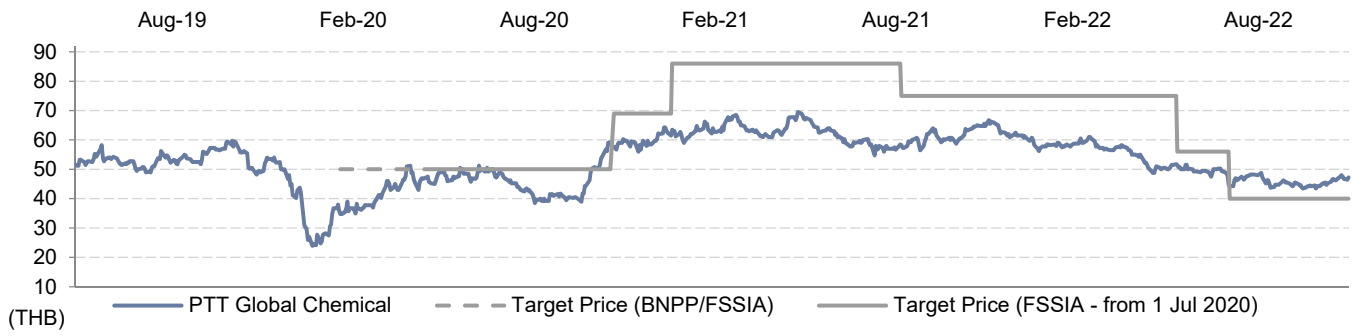
Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
08-Nov-2019	BUY	45.00	24-Sep-2020	BUY	21.00	30-Mar-2022	BUY	40.00
20-Feb-2020	BUY	43.00	18-Jan-2021	BUY	38.00	05-Aug-2022	BUY	41.00

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 08-Nov-2019

Price and TP are in local currency

Source: FSSIA estimates

PTT Global Chemical (PTTGC TB)



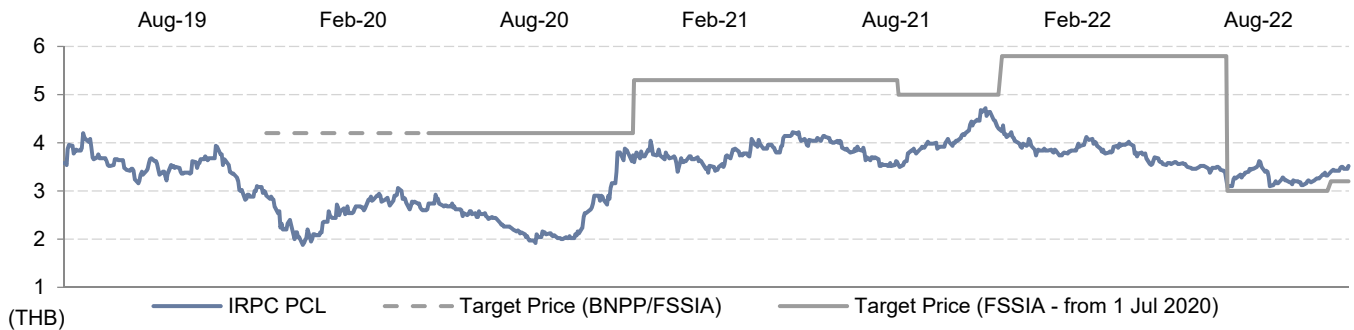
Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
09-Apr-2020	BUY	50.00	18-Jan-2021	BUY	86.00	28-Mar-2022	HOLD	56.00
27-Nov-2020	BUY	69.00	03-Aug-2021	BUY	75.00	12-May-2022	REDUCE	40.00

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 08-May-2020

Price and TP are in local currency

Source: FSSIA estimates

IRPC PCL (IRPC TB)



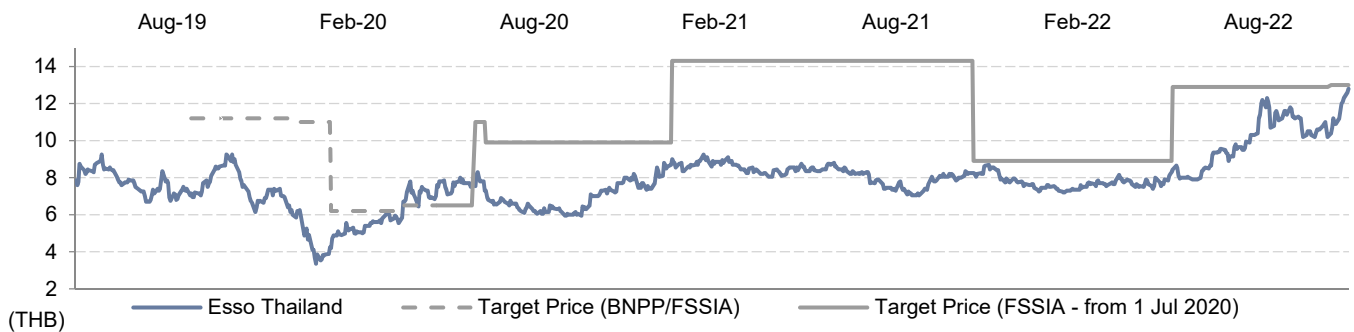
Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
14-Feb-2020	BUY	4.20	04-Aug-2021	BUY	5.00	11-May-2022	REDUCE	3.00
22-Dec-2020	BUY	5.30	29-Oct-2021	BUY	5.80	05-Aug-2022	HOLD	3.20

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 08-May-2020

Price and TP are in local currency

Source: FSSIA estimates

Esso Thailand (ESSO TB)



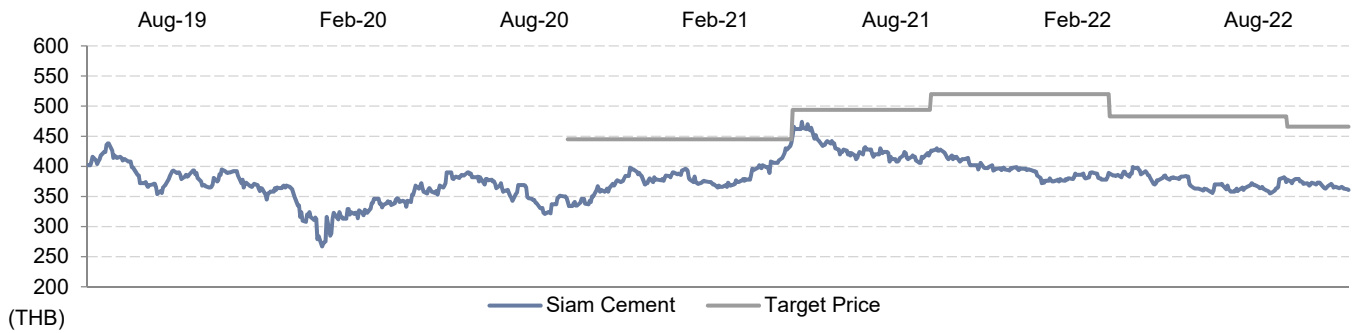
Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
03-Dec-2019	BUY	11.20	31-Jul-2020	BUY	11.00	24-Mar-2022	BUY	12.90
26-Feb-2020	BUY	11.00	11-Aug-2020	BUY	9.90	05-Aug-2022	BUY	13.00
01-Apr-2020	BUY	6.20	18-Jan-2021	BUY	14.30			
26-May-2020	BUY	6.50	04-Oct-2021	HOLD	8.90			

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 26-May-2020

Price and TP are in local currency

Source: FSSIA estimates

Siam Cement (SCC TB)



Date	Rating	Target price	Date	Rating	Target price	Date	Rating	Target price
14-Oct-2020	BUY	445.00	25-Aug-2021	BUY	520.00	30-Jun-2022	BUY	466.00
27-Apr-2021	BUY	494.00	27-Jan-2022	BUY	483.00			

Suwat Sinsadok, CFA, FRM, ERP started covering this stock from 14-Oct-2020

Price and TP are in local currency

Source: FSSIA estimates

Company	Ticker	Price	Rating	Valuation & Risks
Thai Oil	TOP TB	THB 59.50	BUY	Downside risks to our EV/EBITDA-based TP are 1) a sharp fall in oil price; 2) weak demand for refined oil products; 3) customer concentrations; 4) currency risk; 5) interest rate risk; and 6) a raw material shortage.
PTT PCL	PTT TB	THB 37.50	BUY	Risks to our SoTP-based valuation are the oil price and potential earnings downsides from government intervention.
Global Power Synergy	GPSC TB	THB 67.75	HOLD	The downside risks to our SoTP-based TP on GPSC include 1) lower-than-expected demand for electricity in Thailand; 2) a lower crude price; and 3) lower-than-expected demand from industrial users. Upside risks are a lower gas price and higher sales volume.
Star Petroleum Refining	SPRC TB	THB 13.20	BUY	TP is based on EV/EBITDA. Downside risks are a sharp rise in oil price and weak demand for refined oil products.
Bangchak Corp	BCP TB	THB 34.00	BUY	The downside risks to our SoTP-based TP include: 1) lower-than-expected demand for petroleum products; 2) higher crude premiums; and 3) unplanned shutdowns of the company's refinery plants.
PTT Global Chemical	PTTGC TB	THB 47.25	REDUCE	The key upside risks to our EV/EBITDA-based TP are a stronger-than-expected HDPE price and HDPE-naphtha margin.
IRPC PCL	IRPC TB	THB 3.52	HOLD	Key upside risks to our neutral view and EV/EBITDA-based target price are rising margins of PP-naphtha, SM and ABS-benzene, and a higher market GRM, while downside risks are weak demand for refinery and petrochemical products and a higher naphtha price.
Esso Thailand	ESSO TB	THB 12.80	BUY	The downside risks to our SoTP-based TP on ESSO include 1) lower-than-expected demand for petroleum products; 2) a higher crude premium; and 3) unplanned shutdowns of its refinery and petrochemical plants.
Siam Cement	SCC TB	THB 361.00	BUY	Downside risks to our SOTP based TP include 1) a lower-than-expected demand for chemicals, CBM, and packaging; 2) rising coal costs for its cement and packaging units; and 3) weaker demand from the automobile industry that could erode the demand for SCC's chemical unit and its dividend contributions.

Source: FSSIA estimates

Additional Disclosures

Target price history, stock price charts, valuation and risk details, and equity rating histories applicable to each company rated in this report is available in our most recently published reports. You can contact the analyst named on the front of this note or your representative at Finasia Syrus Securities Public Company Limited

FSSIA may incorporate the recommendations and target prices of companies currently covered by FSS Research into equity research reports, denoted by an 'FSS' before the recommendation. FSS Research is part of Finasia Syrus Securities Public Company Limited, which is the parent company of FSSIA.

All share prices are as at market close on 23-Aug-2022 unless otherwise stated.

RECOMMENDATION STRUCTURE

Stock ratings

Stock ratings are based on absolute upside or downside, which we define as $(\text{target price}^* - \text{current price}) / \text{current price}$.

BUY (B). The upside is 10% or more.

HOLD (H). The upside or downside is less than 10%.

REDUCE (R). The downside is 10% or more.

Unless otherwise specified, these recommendations are set with a 12-month horizon. Thus, it is possible that future price volatility may cause a temporary mismatch between upside/downside for a stock based on market price and the formal recommendation.

* In most cases, the target price will equal the analyst's assessment of the current fair value of the stock. However, if the analyst doesn't think the market will reassess the stock over the specified time horizon due to a lack of events or catalysts, then the target price may differ from fair value. In most cases, therefore, our recommendation is an assessment of the mismatch between current market price and our assessment of current fair value.

Industry Recommendations

Overweight. The analyst expects the fundamental conditions of the sector to be positive over the next 12 months.

Neutral. The analyst expects the fundamental conditions of the sector to be maintained over the next 12 months.

Underweight. The analyst expects the fundamental conditions of the sector to be negative over the next 12 months.

Country (Strategy) Recommendations

Overweight (O). Over the next 12 months, the analyst expects the market to score positively on two or more of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.

Neutral (N). Over the next 12 months, the analyst expects the market to score positively on one of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.

Underweight (U). Over the next 12 months, the analyst does not expect the market to score positively on any of the criteria used to determine market recommendations: index returns relative to the regional benchmark, index sharpe ratio relative to the regional benchmark and index returns relative to the market cost of equity.